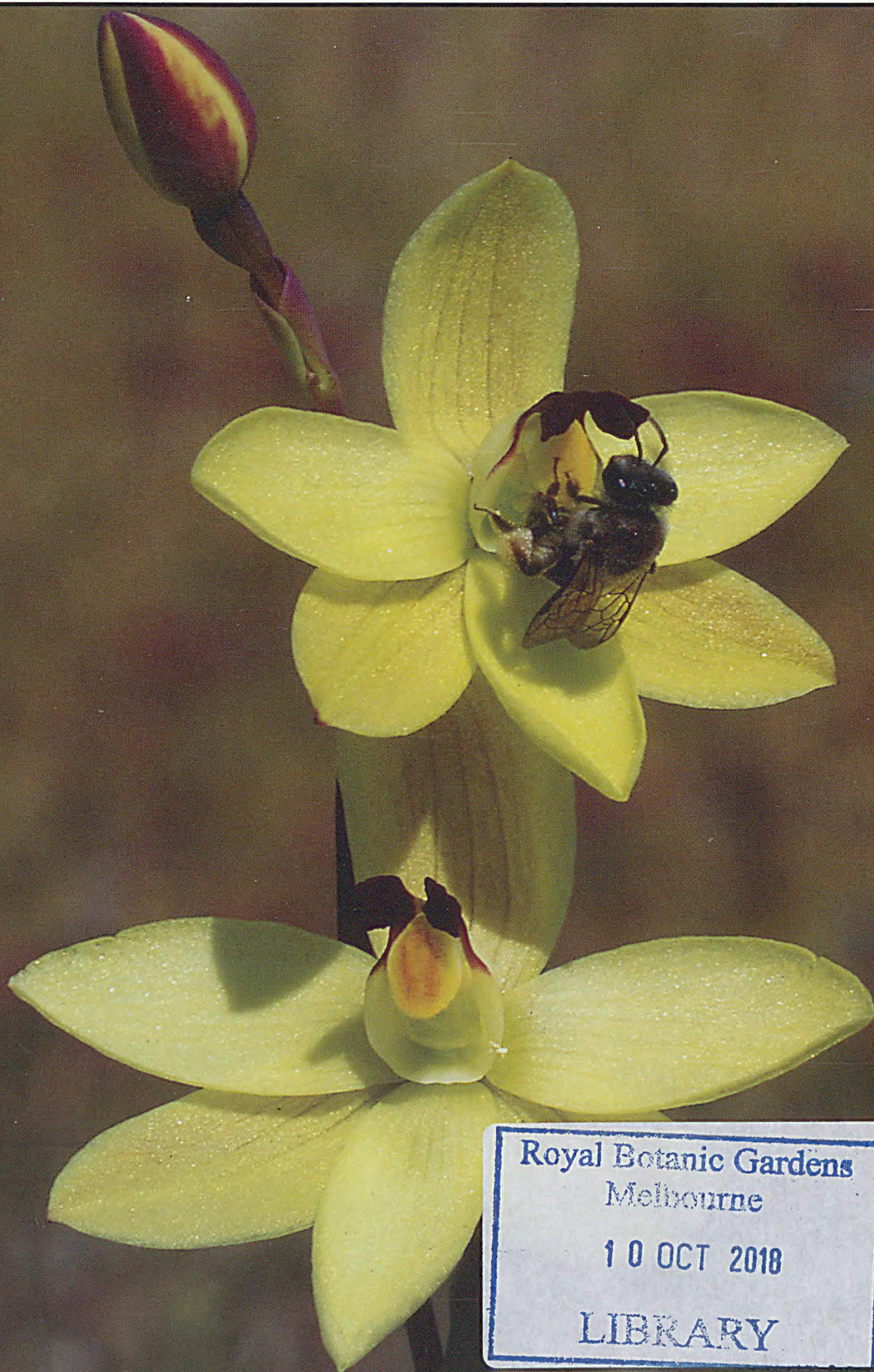


The Orchadian

Volume 19, Number 5

September 2018

Official Journal of the Australasian Native Orchid Society Inc.



Thelymitra antennifera being pollinated by female *Leioproctus*, Western Australia. Photo Andrew Brown



The Orchadian

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Please include your contact information for communication and publication.

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**9th AUSTRALASIAN NATIVE ORCHID
CONFERENCE AND SHOW
'GET GOING, GET GROWING'
21 – 26TH AUGUST 2019
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ANOS Inc. in association with ANOS KABI Group Inc. invite all orchid growers to their 9th Triennial Show and Conference in Strathpine, Brisbane in 2019. The organisers are planning a program of speakers and workshops to provide an interactive learning experience covering many aspects of Australasian orchids. Come along and join in the fun, expand your knowledge, catch up with old friends and make new ones.

The orchid show will have floor and bench displays, with Champion Hybrid and Champion Species both receiving \$500. There will also be a photographic competition.



ANOS Council Meetings proudly Sponsored by Telstra Countrywide

Western Australia is a world ranking orchid hotspot, with many species endemic to the southern corner, and a few species shared with eastern Australia. *Thelymitra* is well represented, and Andrew Brown surveys some of the diversity in the genus, which requires much further study to appreciate fully.

Spring ushers in a peak period of flowering in the natural environment, and in collections and shows. It is relatively short in many regions, creating a difficult choice for orchid enthusiasts - to go bush, or concentrate on the diversity of cultured species and hybrids. This season has been outstanding for *Dendrobium*, with a total of nine awards at the Kempsey Speciosum Spectacular which was held on the first weekend in September. There were five awards involving hybrids. They ranged between modest sized plants to specimens such as *D. Jayden* 'Sheen' over one metre high. Roslyn Capell reviews a selection of *D. speciosum* and its hybrids at this outstanding annual event.

Breeding in *Sarcochilus* commenced with pioneer Ira Butler making primary hybrids in the 1960s, with the objectives of creating hardy plants with larger, coloured flowers. Sheryl Lawson has completed a review of the main breeding lines with assistance from some of the current major breeders. It is a starting point for growers venturing into forming

collections of these plants, and a resource for ANOS judge training groups. The contribution of many Australian breeders to the wide range of plant types and colours is highlighted.

Similarly, continuing the tradition of celebrating breeders of Australian orchids, the use of *D. falcorostrum* in hybridisation is reviewed, with 55 crosses involved the species as a parent. The potential for progeny with colours of the other parent in crosses is considerable, and warrants a resurgence of using *D. falcorostrum* as a parent. David Butler continues his excellent insights into *Sarcochilus* breeding, and Matt Renner returns to the time of the first hybrid made in Australia, *Dendrobium* Ellen.

Recording and publishing historical accounts of breeders and other major contributors to Australian orchids in *The Orchadian* or other forums is to be encouraged. Writers, especially those with personal knowledge of the work of others might consider undertaking historical projects, and forming a group with a medium to long range time frame.

Erratum. ANOS Award 299 was incorrectly attributed at the production stage in the last issue, Volume 19:4, and is republished in the award section of this issue.

Peter Adams

President's AGM Report 2018

The last twelve months have been a period of continuing consolidation for ANOS Inc., due to the hard work of councillors and supporting members, many of whom put in many hours of work per week for the society. The following achievements are highlighted:

From our treasurer David Brewster, we have a solid financial foundation with a small operating surplus after adjustments. Ros Capell has worked hard in her conservation position, in particular keeping NSW members informed of the new state legislation and its

progress, and updating information on the website.

Peter Adams has produced four outstanding editions of *The Orchadian*, which is driving an increase in membership, both from lapsed members rejoining, and new members from Australia and overseas.

The National Registrar, Dave Groffen, has provided leadership to the judging group, and presided over an update of the handbook and judging course. It is very encouraging that two new groups of trainee ANOS judges are

commencing, in Tasmania and New South Wales. We welcome their enthusiasm and look forward to their participation. This will allow ANOS Inc. to provide more services to groups for judging events, and increase our capacity to give awards to worthy plants.

The membership secretary, David James, is outstanding in his commitment to managing the membership lists and in communicating with members. Malcolm McGowan and Callyn Farrell have maintained our on-line presence, both the website and Facebook sites, in a professional manner. Malcolm has also been the producer of our regular free newsletter, which now goes out to well over 200 online subscribers, including overseas enthusiasts. ANOS Inc. secretary Rick Winch has provided solid support for several years now, and keeps councillors focussed and on track.

All council members have been diligent in their attendance and input into the running of our society. I thank them all for their enthusiasm and work this year, particularly Barry Dudman for his work in promoting ANOS in Tasmania, and Tony Clarke for his input as past president.

I have liaised with ANOS groups and individuals this year. Topics include conservation issues, and exciting new projects in three states (WA, SA and Tasmania) concerning native orchid identification systems with different approaches. The citizen science movement has an increasing presence in orchid research, both within ANOS groups, and with other Australians who have a passion for nature and conservation. I have also promoted ANOS Inc. internationally through on-line contacts and received very positive feedback about our organization as it presents itself through *The Orchadian* and our online presence. Currently our membership is strongest in the eastern states, and as a national organisation we can look to increase our presence and support in South Australia, Western Australia, and wider areas such as New Zealand and PNG. This is an area council can explore further.

We acknowledge the contribution of several significant members of ANOS who have

passed away this year. Ruth Rudkin was a hard working ANOS Life Member, including as a writer, and as secretary of the Ira Butler Trophy Committee (*The Orchadian* 19:2, 86–87). Leo Cady was a founding member of ANOS, Life Member of ANOS Illawarra Group, and a prolific contributor to plant journals as well as *The Orchadian* (*The Orchadian* 18:2, 76–77). Steve Clemesha was a notable naturalist who made significant contributions to Australian orchids through his field studies and writing.

Today we are launching our online Australian hybrid list which is a downloadable pdf, free to members and the public to print out for their own use. It will be continuously updated. It is the work of the website team and Peter Adams over several years.

We are also opening registration for the 2019 Show and Conference at Strathpine on 21–26th August 2019 in conjunction with ANOS Kabi Group. You can register online or download a registration form. I thank ANOS KABI Group for their willingness to work with ANOS Council on a new model of our triennial Show and Conference. ANOS Council is providing full financial backing, and a greater contribution to organization of the conference and show. A joint planning committee has been established. I encourage all members and ANOS societies to support this event, both financially through sponsorship, through their attendance, and we also ask for your willingness to volunteer time at the event to ensure the work is shared evenly.

The planning committee is confirming speakers and discussion groups, and more details will be revealed in coming months.

I ask all groups to consider whether they are able to commit to hosting the next show and conference in 2021 with the support of ANOS Council. Please talk to myself or any council member with any questions about what is involved. I look forward to seeing you all at Strathpine next year.

Sheryl Lawson

Western Australia's Superb Sun Orchids (*Thelymitra*)

Text and photos Andrew Brown
andrewbrown3@optusnet.com.au

Commonly known as sun orchids, *Thelymitra* J.R. Forst. and G. Forst. is a large genus described by the German botanists Johann and George Forster in 1776, from a collection they made from the South Island of New Zealand during Cook's second voyage (1772–1775), naming the type species *T. longifolia* in reference to its long leaves. The first known sighting of the species by European plant collectors was made a few years prior to this when it was collected by Joseph Banks from the North Island of New Zealand, during Cook's first expedition to the South Pacific (1768–1771).

The generic name is derived from the ancient Greek words *thelys* (belonging to women) and *mitra* (headdress or turban) and refers to the hooded column prominent in many species. The common name refers to most species opening only on warm sunny days. In the 242 years since *Thelymitra longifolia* was described, 109 named species and 20 as yet unnamed species have been discovered, the majority endemic to southern and eastern Australia, with a few also found in New Zealand, and a single species, *Thelymitra papuana*, found in New Guinea, New Caledonia and the Philippines. Forty two named species and six unnamed species are found in Western Australia, 38 of these endemic.

Just four Western Australian species (*T. antennifera*, *T. benthamiana*, *T. flexuosa* and *T. mucida*) are also found in eastern Australia. However, the number of non-endemic Western Australian species was at one time thought to be much larger. The five Western Australian species shown in Table 1 under "Current WA Name" were at one time thought to be synonymous with the eastern Australian species listed under "Previous WA name" but are now considered distinct. In addition, the orchid previously thought to represent *Thelymitra* × *macmillanii* in Western Australia is now known to be a derived from

a different hybrid combination to that of the type from Port Phillip Bay in Victoria. While the Victorian taxon is a hybrid between *T. antennifera* and *T. megalyptra*, the Western Australian taxon is a hybrid between *T. antennifera* and *T. macrophylla*.

Distribution and Habitat

In Western Australia, sun orchids are predominantly found in the lower south-west below a line drawn from just north of Kalbarri to Israelite Bay with the distributions of a few species extending eastwards along the south coast to Eyre on the Great Australian Bight. Just two Western Australian species have been found outside this area. *Thelymitra petrophila*, remarkably, has been found in the Great Victoria Desert near the Western Australia-South Australian border, over 600 km east of the next known population, and *T. sargentii* has been found near Queen Victoria Springs, 200 km east of Kalgoorlie. Given the difficulty of access into many remote inland areas it is possible that other, as yet undiscovered, far inland populations of sun orchids are waiting to be found.

Throughout their wide geographic range, Western Australian sun orchids can be found in a variety of habitats, ranging from high rainfall forests and woodlands, to dryer inland mallee-heath, dense coastal shrublands, shallow soil pockets on granite outcrops, rocky breakaways, salt lake margins and seasonally wet flats. Many sun orchids found in these areas are habitat specific, with *Thelymitra campanulata* occupying sandy soils in woodlands and shrublands, while *T. frenchii* grows in shallow soil pockets on granite outcrops, and *T. canaliculata* grows in peaty soils in swampy areas. There are very few Western Australian habitats occupied by native orchids that do not contain at least one species of sun orchid.



Thelymitra sp. Ongerup is an unnamed Western Australian species.



Thelymitra maculata is one of eight species in the *T. spiralis* complex.



Thelymitra apiculata is the first Western Australian species to appear each year, flowering as early as May in some areas.



Pollination of most *Thelymitra* species is by native bees.



Thelymitra sargentii is one of two Western Australian species with a distribution that extends outside the lower south-west corner of the state.

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The column of *Thelymitra* species is often adorned with prominent glands and wings.

Characteristics

Western Australian sun orchids have 1–20 brightly coloured flowers ranging from white, yellow, orange and red to various shades of blue, mauve and purple. Some species even have a combination of colours in the one flower. *Thelymitra cucullata* has greenish-cream flowers with purple-magenta blotches, and *T. occidentalis* has blue flowers with prominent purple stripes. In all species the petals and sepals are similar in size and shape. The column however is often adorned with prominent glands and wings. This feature, in combination with flower colour, flower markings (spots, blotches, stripes, suffusions) and flower size, are used to distinguish species.

Based on column morphology, sun orchids can be grouped into complexes and in Western Australia these comprise the *Thelymitra fuscolutea* complex (nine species), *T. spiralis* complex (eight species), *T. campanulata* complex (four species), *T. crinita* complex (two species), *T. macrophylla* complex (13 species) and *T. flexuosa* complex (three species). There are three species, *T. sargentii*, *T. tigrina* and *T. villosa* that do not fit neatly into any of these groups.

Sun orchids have a single, basal, usually smooth leaf which varies greatly in shape and size but can often be used to distinguish between groups of species in Western Australia. For instance, most members of the *T. macrophylla* complex have a long, relatively narrow leaf while members of the *T. fuscolutea* complex have a short, broad leaf and members of the *T. spiralis* complex have a narrow, spirally twisted leaf. Just one species, *T. villosa*, has a hairy leaf.

Pollination is predominantly by native bees attracted to the flowers by scent and colour, however some species can self-pollinate in the absence of a suitable insect pollinator. An example of a Western Australia species that can self-pollinate is *Thelymitra vulgaris*. Following flowering, it is not unusual to see every seed capsule swollen and full of seeds. Most species grow as scattered individuals or

in small groups, but some, such as *Thelymitra antennifera*, can form large colonies ranging from dozens to many hundreds of plants.

Flowering of Western Australian sun orchids is spread over most months of the year, beginning in May with *Thelymitra apiculata*, and finishing in February with *T. fuscolutea*. The majority of species flower between August and November.

While most Western Australian sun orchids are common there are three species, *T. dedmaniarum*, *T. psammophila* and *T. stellata*, that are now rare in the wild. These species are protected by State and Commonwealth legislation and have recovery plans in place. A further seven species, *T. apiculata*, *T. jacksonii*, *T. magnifica*, *T. sp. Ongerup*, *T. pulcherrima*, *T. variegata* and *T. yorkensis*, are thought to be rare but require further monitoring and survey to confirm their conservation status and are listed as Priority Flora.

Some Notable Species

Regardless of their rarity or commonness, finding sun orchids in full bloom on warm sunny days is always a delight. With their myriad of colour forms all could be considered superb, but everyone has their favourites and here are seven of mine.

Without a doubt the most sought after and, arguably, best recognised Western Australian sun orchid is the famous *Thelymitra variegata*. Found in coastal areas between Perth and Albany and flowering in August and September, it has up to five brightly coloured pinkish-purple and yellow, purple blotched flowers 30–50 mm across. Unfortunately, as much of its habitat has been cleared for agriculture and housing, the orchid is now extremely rare in the wild. The type (western coastal) form is currently known from a single locality where, at last count, just nine flowering plants were found. There are two more common closely allied species, *T. pulcherrima* and *T. speciosa*, which were at one time included in *T. variegata* but have since been named as separate species.



Thelymitra fuscolutea is the last of the Western Australian sun orchids to flower each year, in some south coastal areas continuing into early February.



Thelymitra variegata is the most sought after and best recognised sun orchid species found in Western Australia.



Thelymitra paludosa is a late flowering species found between Perth and Esperance, often not reaching its peak until November to early December.



Thelymitra dedmaniarum is the rarest of the Western Australian sun orchids and is critically endangered.



Thelymitra jacksonii is a rare late flowering species named in honour of the late William Jackson of Walpole.



Thelymitra petrophila is a common inhabitant of inland granite outcrops.



Thelymitra cucullata has up to ten unusual greenish-cream, purple or magenta-blotched flowers.



The beautiful sky blue flowered *Thelymitra crinita* is a common sight in the Darling Range near Perth on sunny spring days.

Found in seasonally swampy areas between Perth and Esperance *Thelymitra paludosa* is a late flowering species often not reaching its peak until November or early December. Flower colour is variable and ranges from deep purple to mauve, blue, pink or white and it is not unusual to find many of these colour forms intermixed at the one location. While the type form occupies seasonally wet areas such as swampy flats and stream margins, a form currently included with *T. paludosa* occurs in well drained woodland and forest habitat. Further research is required to ascertain the relationships of these two forms.

The rarest sun orchid in Western Australia is the critically endangered *Thelymitra dedmaniarum*. The species is found over a very narrow geographic range to the east of Perth and, as at November 2017, just five flowering plants were known in the wild. The reasons for its rarity are not fully understood but are likely to be attributed to increasingly lower winter rainfall, little natural pollination, weeds, grazing and a lack of suitable habitat. Flowering in early November the species has up to 15 golden brown and yellow, cinnamon-scented flowers 20–40 mm across and is without a doubt one of our most beautiful sun orchids.

Found between Perth and Esperance, *Thelymitra cucullata* has up to ten unusually coloured greenish-cream, purple or magenta-blotched flowers 10–15 mm across, which appear between October and November. Plants inhabit swampy flats and shallow seasonally wet soil pockets on granite outcrops, flowering most profusely in the season following summer fire. Although considered a member of the *T. flexuosa* complex, which includes the yellow flowered *T. flexuosa* and *T. psammophila*, the unique floral colouration of this species readily separates it from these others.

Named in honour of the late William Jackson of Walpole, *Thelymitra jacksonii* is a rare late flowering species with up to 12 rich brown and orange, cinnamon-scented flowers 30–50 mm across. It is found in scattered populations between Broke Inlet and Mt. Barker, and is

one of the last sun orchids to flower each year, beginning in December and often continuing into early January. The species is subject to monitoring and survey as part of the Western Australian *Adopt an Orchid Project* (*The Orchadian* 19: 102–109) and it is hoped that further populations of this beautiful uncommon orchid will be found.

A common inhabitant of inland granite outcrops is *Thelymitra petrophila*. Found between Mullewa and Balladonia, with rare scattered populations extending eastwards to near the South Australian border, it is, with the possible exception of *T. antennifera*, the most widespread of the Western Australian sun orchids. Plants have up to ten blue, purple, white or pink flowers 10–20 mm across, which appear between August and October.

On warm sunny spring days, *Thelymitra crinita* is a common sight in the Darling Range near Perth, with each plant producing up to 15 attractive sky-blue flowers 20–30 mm across. In south coastal areas flowers are smaller and fewer in numbers on the scape and flowering is much later, not reaching its peak until December in some locations. Rare hybrids between *T. crinita* and *T. macrophylla* have been located where the two species occur near one another.

Andrew Brown is a conservation biologist and taxonomist associated with the Western Australian herbarium. He is author or co-author of many books and journal publications.

Table 1 Changes in nomenclature of Western Australian *Thelymitra* species

Previous WA name	Current WA name
<i>T. aristata</i>	<i>T. macrophylla</i>
<i>T. carnea</i>	<i>T. flexuosa</i> × <i>T. vulgaris</i>
<i>T. matthewsii</i>	<i>T. uliginosa</i>
<i>T. nuda</i>	<i>T. paludosa</i>
<i>T. pauciflora</i>	<i>T. vulgaris</i>

Summary

An historical perspective of the development of *Sarcochilus* line breeding and hybridising is presented, with emphasis on the important species and early hybrids. Major hybrid lines are considered, including classic and non classic styles of hybrids, and the emergence of an increased range of colours. Results so far are discussed, in particular the huge increase in hybrid registrations in recent years.

Introduction

Sarcochilus species have a range of plant sizes with charming and eye-catching flowers, often colourful, so why hybridise them? The smaller species, very decorative and highly coloured, are more difficult to grow, and are generally hard to obtain and maintain in collections, as well as not readily available. One challenge for breeders has been to transfer that charm and colour into hybrids that are sturdy, long lived, have a wider variety of colours, larger labellum, and have longer or repeat flowering. Another goal is to line breed the species to explore their potential, and also use the progeny as parents to remake hybrids.

The modern story starts with the indefatigable English naturalist Robert Brown, who made the most of collecting time in Australia between 1802 and 1805, describing many Australian genera and species in his huge 1810 work *Prodromus Florae Novae Hollandiae et Insulae Van Diemen*. He established the genus *Sarcochilus* based on his collection of an epiphytic orchid in the Port Jackson area, formally described as *Sarcochilus falcatus* R.Br. There followed a steady trickle of new species – nine described in the 19th century in Australia, and three more in the 20th century. *Sarcochilus* occurs along the east coast of Australia, from northern Tasmania to Cape York. The genus is also found in New Caledonia and New Guinea. *Sarcochilus* is placed in the tribe Aeridinae, and in this review I am considering the 13 Australian species recognized in *Genera Orchidacearum* (Pridgeon et al. 2014) and the World Checklist

of Selected Plant Families. A number of other described species have moved in and out of the genus, reflecting that the relationships within this group of orchids are hard to evaluate, even with modern DNA studies. Other Australian Aeridinae genera such as *Plectorrhiza* and *Rhinerrhiza*, often described as *Sarcochilus* allies, are not discussed in this article.

Major Species and Line Breeding

Most line breeding has concentrated on *S. hartmannii* and *S. fitzgeraldii*, the two species with larger, standard shaped flowers and easier culture. The contributions of each species to hybrid progeny is presented in Table 1.

Sarcochilus hartmannii

This generally lithophytic species is variable in flower features, flowers in late winter to spring, and can make spectacular specimens. The best areas for high quality *S. hartmannii* in the bush were considered to be Numinbah Valley (from the New South Wales border north into Queensland) and an area of the western end of the Nightcap Range known as Blue Knob, in north-east New South Wales.

The species will form side shoots and develop into an attractive specimen. Flower count is up to 25 on erect or arching racemes. The flower segments are generally ovate, open to well-filled in, the flower outline round to oval or triangular. The best flowers have a crystalline meaty substance with varying degrees of orange-red spotting or colouration in the centre of the flower but seedlings with no red colour, or a yellow centre, have been collected. There are yellow-orange markings on the labellum. Numinbah forms usually have prominent red centres, while the Blue Knob forms are mainly white with a small amount of colour. Size of flowers is highly variable over the distribution range. The size of the labellum also varies, and can be very small to small compared to the other segments. *Sarcochilus hartmannii* 'Red Snow' HCC/ANOS 1989, collected by Ken Russell, became a significant parent for yellow-flowered breeding lines.

The best wild collected plants of *S. hartmannii* are of high quality, and line breeding has produced some improvement. There have been several generations of line breeding, and faults that have emerged when trying to breed larger flowers include fluting and ridges on thickened and somewhat distorted tepals. It is the species most commonly present in the background of hybrids (Table 1), used as a parent both directly and through the use of *S. Fitzhart*. There is considerable scope for further line breeding, and exhibition of this strong growing and very attractive species.

ANOS has awarded four HCC and two AM quality awards to *S. hartmannii*, and since 1989 the Australian Orchid Council (AOC) has awarded 22 HCC and 16 AM (five to plants bred by Neville Roper, who also received an ASR in 2015). There is no FCC awarded from ANOS, the highest award being AM/ANOS 2016 for 'Tristen' with 84.9 points (with 26 inflorescences, 420 flowers and buds). One can only speculate about why this is so.

Sarcochilus fitzgeraldii

This spring flowering lithophyte is relatively easy to cultivate in the more southern states, and has a pendulous habit with branching, with a flower count of up to fifteen fragrant flowers. Wild plants tend to have flowers with spotting or marbling, or a central red colour, rarely pure white, with an open, rather straggly shape to the judges' eyes. The segments are club-shaped, and the base of the flower can be flattened. The labellum is more balanced in size with the tepals compared to *S. hartmannii*, and has varying degrees of orange-gold spots and bars, and flowers can appear rather floppy, having less texture and substance.

A well known plant of *S. fitzgeraldii* is 'Lorraine' AD/AOC 1990, collected in the wild by Lorraine Fagg around 1976 in northern New South Wales (Woolf and Fagg 2000). The site remains a secret. Lorraine describes the plant as a very poor grower (pers. comm. 2018) which she still has in her collection. This plant and the subsequent selfings (which



Flowering 2017 Photo David Butler

were generally much stronger growers, and some of which showed intensified colour), have been used extensively in hybridising, due to the deep red/purple colouration of the flowers which is passed on to the progeny. The orange colour on the labellum also tends to be inherited.

Line breeding has been dominated by a search for the most solid red seedling, as well as better shape and substance, for use in breeding hybrids. There has been improvement in the results of line breeding, in colour, shape and size, but this is not reflected in award judging results. There is only one ANOS award, which is ‘Toska’ AD/ANOS 1994 for colour, and AOC has six awards, three HCC and three AD for colour since 1986. Perhaps judges are comparing the flowers unfavourably with *S. hartmannii* rather than judging them on their own merits as a species, which has the features of open, somewhat lax and untidy flowers and racemes.

A judging dilemma which can arise is plants of *S. Fitzhart* incorrectly identified as *S. fitzgeraldii*. The species can usually be distinguished by more falcate leaves, and a tendency to less filled in, club shaped flower segments.

Table 1. Number of times *Sarcochilus* species used as a parent

<i>S. hartmannii</i>	116
<i>S. fitzgeraldii</i>	51
<i>S. falcatus</i>	28
<i>S. ceciliae</i>	24
<i>S. australis</i>	23
<i>S. spathulatus</i>	20
<i>S. hirticalcar</i>	18
<i>S. weinthalii</i>	18
<i>S. olivaceus</i>	5
<i>S. serrulatus</i>	4
<i>S. hilli</i>	4
<i>S. dilatatus</i>	2

Taken from: *Checklist of Australian Native Orchid Hybrids* anos.org.au

A big challenge in breeding has been the inconsistency of flower colour, thought to be in large part due to the use of ‘Lorraine’, which is a trait passed down to the progeny. The purple/red colour on flowers can vary depending on the season and year, the maturity of the plant, and the placement of flowers on the raceme (deeper colour toward the end of the raceme). There can be inconsistency of colour on individual flowers. This trait is a challenge for breeders and judges, with little agreement about whether and how much to penalize for this. David Butler chooses to use parents that have consistent colour in all flowers on the raceme (pers. comm.) to avoid this problem. *Sarcochilus fitzgeraldii* is the second most common species in the background of hybrids (Table 1), in the past through the use of *S. Fitzhart*, or *S. Cherie* and *S. Heidi* (and their progeny), which are hybrids containing only *S. fitzgeraldii* and *S. hartmannii*.

Sarcochilus falcatus

A species with a wide distribution range, from the New South Wales border with Victoria, to the Atherton Tableland in Queensland. It is relatively easy to grow in cultivation and is a generally pendulous plant, with arching

Table 2. Frequency of *Sarcochilus* species in *Sarcochilus* hybrid background

<i>Sarcochilus</i> species	No. of <i>Sarcochilus</i> hybrids containing the species
<i>australis</i>	53
<i>ceciliae</i>	242
<i>dilatatus</i>	48
<i>falcatus</i>	354
<i>fitzgeraldii</i>	706
<i>hartmannii</i>	757
<i>hilli</i>	7
<i>hirticalcar</i>	181
<i>olivaceus</i>	73
<i>serrulatus</i>	12
<i>spathulatus</i>	75
<i>weinthalii</i>	81

Table 3 Some notable classic hybrids before 2000

<i>Sarcochilus</i> hybrid	Year registered	Hybridist	Parents	No. times used as direct parent	No. awards for hybrid
Fitzhart	1963	I.Butler	<i>hartmannii</i> x <i>fitzgeraldii</i>	66	12
Melba	1966	I.Butler	<i>hartmannii</i> x <i>falcatus</i>	28	10
Heidi	1983	D.Banks	Fitzhart x <i>hartmannii</i>	53	4
George Colthup	1986	D.Banks	Melba x <i>hartmannii</i>	21	7
Melody	1987	W.Upton	Melba x <i>fitzgeraldii</i>	18	2
Cherie	1990	W.Upton	Fitzhart x <i>fitzgeraldii</i>	39	5
Judith	1992	W.Upton	Melba x Fitzhart	21	9
Burgundy On Ice	1994	Florafest	Judith x Fitzhart	14	21
Dove	1997	N.Finch	Melody x <i>hartmannii</i>	27	5
Snowhart	1998	N.Roper	Cherie Snow x <i>hartmannii</i>	21	0

Table 4. *Sarcochilus* hybrids made with *S. hirticalcar* as one parent

Other Parent	Hybrid Name	Registration Details
<i>ceciliae</i>	Frances	W.T. Upton 1990
Cherie	Beverley Joan	Simpson Orchids 2001
Falcalcar	Double Calcar	C.W. Fitzsimmons - D. Sinclair 2014
<i>falcatus</i>	Falcalcar	DUNO 2006
<i>fitzgeraldii</i>	Nicky	D. Cannon 1982
Fitzhart	Suzette	D.F. Butler 2008
George Colthup	Evee Jade	C.W. Fitzsimmons 2015
<i>hartmannii</i>	Riverdene	V. and N. Jupp 1976
<i>hillii</i>	Julie-Anne	R. Currell 1996
Mavis	Sweetie	W.T. Upton 1991
Melba	Regan	C.W. Fitzsimmons 2015
Melody	Margaret Cottrell	D. Smedley 1998
<i>minutiflos</i> (syn. <i>S. hillii</i>)	Olga	D. Cleal 2008
Perky	Janice	C.W. Fitzsimmons 2013
Pinkhart	Polka-Dot	N. Finch 1994
Pinky	Wollumbin Surprise	Simpson Orchids 1995
Ruby	Cherry Cheer	R. Clement 1997
Tibrogargan	Seamus Murphy	Simpson Orchids 2003

to pendulous racemes. It is highly variable in flower size, shape and colour markings over its wide range, with up to 14 delightfully fragrant flowers per raceme. Flowering time is winter to spring. Flower segments are club shaped, flower shape overall tends to be oval, and flowers can be somewhat lax and lacking in texture, particularly when larger. The flowers do not usually open flat. There is a particularly large flowered and attractive late-flowering form, locally called the 'big white form', which has paler colouration and can form very attractive specimens. Tepal colour is white, with yellow spots on the labellum and varying degrees of attractive purple striping on the side lobes or labellum, and some plants have minimal or no colouration. There has been little line breeding as yet with this species.

There are six quality ANOS awards since 1992 - five HCC and one AM for 'Big White #1' AM/ANOS 2015. AOC has awarded four HCC since 1977. I think the same issues arise in judging as for *S. fitzgeraldii*, that we compare this species unfavourably with *S. hartmannii*, rather than with the optimum for the species. It is the third most common species in the background of hybrids (Table 2).

Other *Sarcochilus* Species in Hybrids

Sarcochilus hirticalcar

This small-flowering epiphytic species has had an influence on *Sarcochilus* breeding way out of proportion for a species that is only found in a small part of Cape York, Queensland, in the McIlwraith Range. It has a long flowering period over late spring and summer, and has a distinctive prominent labellum, large for the size of the flower, and distinctive patterning of red-purple markings within the flower. Flower count is up to eight, and flowering can be progressive. It is the seventh most common species found in the background of *Sarcochilus* hybrids (Table 1).

Traits it passes on to hybrids include significant extension of the flowering period, with recurrence of flowering in summer, autumn and winter, as well as a heavy flower texture, and rounded tepals without a filled

in flower. The larger labellum passes down to the progeny and provides flowers with more balanced segments, particularly where there is a background of *S. hartmannii* and *S. fitzgeraldii*, which have smaller labellums. The species passes on green, yellow and red colours and has been an important contributor to yellow breeding. David Butler has found that when crossed with pink-reds it produces stronger reds, while when crossed with white flowers it will produce yellow progeny. It has by far the largest representation in hybrids of any of the smaller flowering *Sarcochilus* – present in the background of 181 hybrids (Table 2) and has been used as a direct parent 18 times (Table 1). The most significant hybrids were *S. Riverdene* (crossed with *S. hartmannii*, it one of the earliest primary hybrids, registered by Jupp 1976 and used for further hybrids 13 times) and *S. Nicky* (crossed with *S. fitzgeraldii*, registered by D. Cannon 1982, and used as a hybrid parent eight times).

Sarcochilus Nicky (with shades of mainly red-brown) was crossed with *S. Riverdene* to make *S. Velvet* (registered by Neil Finch of DUNO in 1998), a logical progression seeking further coloured hybrids with shape (with contributions from *S. hirticalcar*, *S. hartmannii* and *S. fitzgeraldii*). *Sarcochilus Velvet* has been a highly important parent, with 30 direct progeny, despite some difficulties with producing seed capsules, and the tendency to monopodial growth habit. There has been a wide colour range produced:

Progressive flowering can be a good or bad feature, as exemplified by some *S. Velvet* seedlings when it is grown in cooler conditions, where, after an initial show of flowers, frustratingly only one or two flowers may be fully open at any time over a period of months during winter. In New South Wales, however, twelve or so flowers may open initially, then it becomes progressive, with three or four flowers out at a time with a raceme up to 300 mm long (D. Butler pers. comm.). Growers appreciate having flowers for much of the year, but this can be less suitable for show bench or quality awards if there is lack of floriferousness.



Sarcochilus hartmannii 'Red Snow' HCC/
ANOS 1989.



Sarcochilus hartmannii 'Yellow Snow' AD/
ANOS 1993. Photo David Butler



Sarcochilus falcatus 'Big White #1' AM/ANOS
2015. Photo David Butler



Sarcochilus fitzgeraldii 'Dark Red Centre'
x 'Anne'. Photo David Butler



Sarcochilus fitzgeraldii 'Mottled'. Photo Peter
Adams



Sarcochilus hirticalcar. Photo Peter Adams



Sarcochilus olivaceus. Photo Peter Adams



Sarcochilus Velvet 'Red and White'.
Photo David Butler



Sarcochilus Fitzhart 'Florafest Magic'
AD/AOC 1999



Sarcochilus Melba 'Mt. Wave'.
Photo Peter Adams



Sarcochilus Magic 'Qasar'.
Photo Peter Adams



Sarcochilus Burgundy On Ice.
Photo Peter Adams



Sarcochilus Judith 'Pamela' AM/AOC 2014



Sarcochilus Bessie 'Pamela' HCC/AOC 2013
The Orchadian Volume 19 Number 5, September 2018

Sarcochilus ceciliae

A variable lithophytic *Sarcochilus* species, the flowers are relatively small, heavily cupped in shape, and usually a shade of pink from deep to pale, with some white forms. Flower count is up to eighteen per raceme and flowering is sequential. Flowering is late spring to summer. Flowers can present rather clumped on erect racemes, with a compact plant shape. It is not an easy species to maintain in cultivation in some regions. There has been some early line breeding with some success in deepening the colour, particularly using the darker pink forms of *S. ceciliae* var. *roseus*, increasing flower size, and flattening out the tepals.

The line bred seedling 'Watermelon Pink', made by David Butler, used a Townsville plant named 'Lucky Strike'. It was not var. *roseus*, but has a relatively open flower, and has been mericlone. There have been three quality awards for the species from AOC, none from ANOS. The highest award was for *S. ceciliae* 'Kathryn Anne' AM/AOC 2009. As a background in hybrids, *S. ceciliae* has been used most commonly after the three major species, and the pink colour does transmit in some seedlings.

Sarcochilus australis

This is a small, cool growing epiphyte, which is very difficult to maintain in cultivation. It has a distribution from Tasmania to northern New South Wales. It can have multiple leads when mature and has very attractive pendant racemes, with up to 16 flowers that all face out from the tree trunk rather than around the raceme. Tepal colours range from green-yellow to purple and green. The prominent long labellum is a contrasting white and the flower shape is distinctive. It flowers in late spring to early summer. As a parent it can increase flower count on pendant racemes with smaller, more open flowers. In first generation hybrids where it is dominant, there can be erratic opening of flowers on stems, rather than sequential, but this disappears in subsequent generations. As a parent it can extend the flowering season into mid to late December. There are 53 registered hybrids containing this species in their background,

and 21 *Sarcochilus* hybrids use *S. australis* as a parent.

The earliest registered hybrids were *S. Southern Cross* (x *S. hartmannii*) and *S. Shooting Star* (x *S. fitzgeraldii*), as might be predicted. There has been renewed interest in *S. australis* breeding lines in the past ten years (Adams 2018). The hybrid *S. Olive Nymph* (*S. Melba* x *S. australis*, registered by Peter Adams, 1989), received ASR/AOC 2010 and two examples have HCC/AOC. When crossed back to classics it maintains the feature of flowers presenting in one plane toward the viewer e.g. *S. Effie* and *S. Edna*.

Sarcochilus dilatatus

This is a small growing spring flowering epiphyte, difficult to maintain in cultivation. Flower count is 2–12 on a short raceme. Colours of tepals are green and brown, often barred. The tepals are long and thin, with expanded segments at their tips, and the labellum, which is white with bands of colour, is very prominent and large. It has been used to introduce colour to hybrids, and is present in the background of 48 hybrids. *Sarcochilus Galaxy* 'Cream 2011' received AM/ANOS in 2016 with six racemes holding 95 flowers (*S. Misty* x *S. hartmannii*). Flower colour is cream with heavily spotted red centre, and flower shape is somewhat open, reflecting the background of equal amounts of *S. dilatatus* and *S. hirticalcar*, plus *S. hartmannii*. Other seedlings have shown more extensive red colouration in streaks and spots.

Sarcochilus weinthalii

This small growing fragrant epiphyte is another species very difficult to grow in cultivation, and is winter to spring flowering. It is notable for the heavy spotting of red-brown-purple on a greenish background. A spot of colour is usually also found on the labellum, which is well balanced with the tepals. It has a good flower count of up to 17 flowers. It was exciting to find that the extensive spotting on the tepals, as well as the colour on the labellum, were strongly transmitted to the first generation in *S. Weinhart* (*S. hartmannii* x *S. weinthalii*, registered by W. and J. Cannons



Sarcochilus Effie. Photo Peter Adams



Sarcochilus Olive Nymph 'Wild Strawberries'
HCC/AD/ANOS 2017. Photo Peter Adams



Sarcochilus Galaxy 'Creamy'. Photo David Butler



Sarcochilus Galaxy 'Plastic Gold'.
Photo David Butler



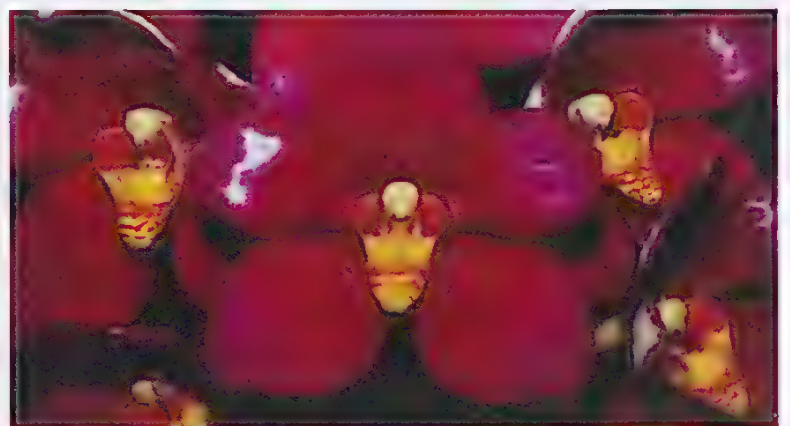
Sarcochilus Parma 'Lemon Drop' HCC/AOC 2015.



Sarcochilus Cherie's Joy 'Wonder Wings'
AD/AOC 2010.



Sarcochilus Kulnura Dragonfly
'Sarah' AM/AOC 2008.



Sarcochilus Allure 'Pillar' HCC/AOC 2015.

in 1970), a cross which showed a lot of variability of spotting in the progeny. The species is a direct parent in 18 hybrids (Table 1) and is present in 81 hybrids (Table 2), some spotting transmitting in later breeding. It does not appear to be playing a dominant role in current breeding. The flowering of *S. Susan* (*S. falcatus* x *S. weinthalii*), registered Florafest 1985, caused some initial excitement as it appeared that grey to lavender shades were appearing, but this line of breeding was only pursued for one generation further.

Sarcochilus olivaceus

This is a mainly epiphytic, fragrant species. It flowers in winter to early spring, with up to 12 flowers per pendulous raceme. Again it is not an easy species to grow in some regions. Flowers are 2–3 cm wide and are gold-green to olive green. The flower shape is distinctive, with widely spaced and thin segments which widen at the tips. The labellum is relatively large and prominent, with erect side lobes (Dockrill 1992). Colour of the labellum is paler than the other segments, or even white, with brownish spotting, as well as a more prominent spotted horizontal brown line. The shape is dominant in early generations. It has been used as a direct parent five times, and is in the background of 73 hybrids (Tables 1 and 2). It is present in small amounts in a number of the Kulnura hybrids, some of which have *S. Canary* in their early background, for example *S. Kulnura Ripple*.

Other Small Epiphytes

S. serrulatus and *S. hilli* have rarely been used in hybrids (Table 1).

Earliest Manmade *Sarcochilus* Hybrids

Australian grower Ira Butler was the pioneer of *Sarcochilus* hybridisation. He registered the first seven primary hybrid combinations between 1963 and 1969, as well as the initial second generation cross in 1969 (*S. Canary* x *S. hartmannii*). He registered a further three primary hybrids before his untimely death in 1972. Ira wrote that his first two objectives in breeding hybrids were to produce larger flowering plants with colour, and hardy plants

of easy culture (Upton p. 75).

His first hybrid was *S. Canary* (*S. hartmannii* x *S. olivaceus*), perhaps not the most obvious starting point for breeding *Sarcochilus*, but looking for colour.

The first lot of plants which I attempted to raise was hartmannii crossed with the golden green olivaceus, later called S. Canary. It was not a particularly good cross to begin with and there were some difficulties in working out satisfactory methods of culture and many seedlings were lost. The first flowering was in 1962, sprays of beautiful canary yellow flowers, a nice colour and a big advance on olivaceus in all respects. The flowers also carried the lovely 'ginger' perfume of olivaceus. The best of the plants were of upward growth habit and had a tendency to throw their sprays upward.

(Excerpt from *Sarcochilus Hybrids* by I.R. Butler, *Australian Orchid Review* June 1967)

In his enthusiasm Ira repeated the cross several times, using different plants of *S. hartmannii*. These exciting results demonstrated early on that the colour from smaller flowering species could transmit to progeny.

The second hybrid, *S. Fitzhart* (*S. hartmannii* x *S. fitzgeraldii*), registered by Ira Butler in 1963, has been a keystone of later hybridisation. The two species, both vigorous growers with relatively large flowers, have been the backbone of hybrid breeding, each being present in over 700 registered *Sarcochilus* hybrids to April 2018 (Table 2). The cross has received five AOC quality awards since 1982, and four awards for colour (AD). The seedlings 'Dungog' and 'Florafest Magic' showed a strong purple/mauve colouration which was not quite solid, and did not transmit fully to the back of the segments. Seedlings tend to have very variable degrees of red and purple spotting in the centre, or all over the tepals, and shape is intermediate between the two parents. Ken Russell made several important sibling crosses which increased the intensity of the red colour, and were used in later colour hybrid breeding.

The third of the triumvirate of species with larger flowers, *S. falcatus*, was a parent of *S. Melba* (*S. hartmannii* x *S. falcatus*), registered by Ira Butler in 1966. This showed enormous primary hybrid vigour, and was a cross repeated many times over the years. The cross has received ten AOC quality awards since 1997 (mainly HCC), but no ANOS awards, and I think in retrospect is relatively underappreciated in the judging system. This hybrid has tended to show branching growth, rather than monopodial, leading to attractive large specimen plants with arching racemes and good flower count. It is not fashionable, but still one of my favourite *Sarcochilus* hybrids, and very rewarding to grow.

Ira also made hybrids with the smaller species *S. ceciliae* (*S. Lois*, *S. Mavis*, *S. Confetti*), *S. australis* (*S. Southern Cross*), *S. hillii* (*S. Minuet*) and *S. spathulatus* (*S. Perky*). Bill and Jean Cannons, of Wayside Nursery, registered *S. Weinhart* in 1970 (*S. hartmannii* x *S. weinthalii*), with strong transmission of the spotting from *S. weinthalii*.

***Sarcochilus* Hybridists**

There have been three prolific hybridists who in recent years have produced high quality awarded crosses. Neville Roper (dec.) registered 121 hybrids between 1990 and 2014, and David Butler has registered 89 hybrids from the year 2000. Both also made hybrids which were registered by others. Scott Barrie has 124 registrations from 2008 (56 of them in 2016–2017). Ken Russell, Noel Jupp, Sid Batchelor, Phil Spence and Neil Finch also made important early contributions. There have been many commercial and non-commercial breeders with smaller numbers of hybrids registered, including DUNO.

Back crossing of hybrids to species is a very common strategy in Australian *Dendrobium* hybrids, especially the use of *D. speciosum*. In *Sarcochilus* hybrids there are multiple strategies. Neville Roper tended to cross highly coloured hybrids together to concentrate colour and shape, as in the example of *S. Magic ASR/AOC*, which also received several AD/AOC awards for colour and 15 quality

awards, making it the most successful cross in colour breeding, e.g. *S. Magic* ‘Scarloideach’ HCC/ANOS 2015. Seedlings of the cross have various combinations of red and pink-red, often not solid colour, but very striking.

Problems with fertility can arise when working with advanced hybrids, and these may be attempted to be overcome by breeding back to species. One strategy is to back-cross to *S. hartmannii* for vigour and flower size, which may not disrupt the colour lines. Scott Barrie is currently developing faster flowering colourful hybrids that appeal to the commercial trade, and has based his lines on a background of *S. Fitzhart*. He is now producing a lot of hybrids by crossing with advanced hybrids.

Classic Style Hybrids

The term ‘classic’ has been in common use for many years, and refers to the larger and more filled in flowering styles, with usually white or red-purple colouration on the tepals. Early hybrids with a large contribution of the smaller flowering epiphytes tended to be referred to as ‘novelty’ or ‘non-classic’ (Adams, 2018) because flower shapes were often exhibiting strong features of those species. As breeding has progressed, this distinction has become less meaningful, with many hybrids having features not that easily classified. As well, there is now development of highly coloured hybrids with a classic shape. Table 3 lists the details of some of the earliest and most widely used direct parents in classic hybrid breeding, including *S. Fitzhart*, *S. Melba*, *S. Heidi*, *S. Cherie* and *S. Dove*.

The most successful classic hybrid from a judging point of view has been *S. Burgundy On Ice* (*S. Judith* x *S. Fitzhart*), registered in 1994 by Florafest during a period of active *Sarcochilus* hybrid registrations. It has a species background of mainly *S. hartmannii* and *S. fitzgeraldii*, with a lesser contribution by *S. falcatus*. The cross has received 18 quality awards from the AOC, including the first FCC for a *Sarcochilus* hybrid, for the seedling ‘Iced Vovo’ FCC/AOC 2009. The cross has also received one quality award

from ANOS for ‘Classic’ AM/ANOS 2011. Colours of seedlings have been highly variable in the awarded plants – from almost solid red to variations of mauve spotting and white with red centres.

Grant Garrett remade *Sarcochilus* Judith (registered 1992 by W. Upton), which received ASR/AOC 2013. Shape is consistently a well rounded outline, with full rounded segments e.g. *S. Judith* ‘Pamela’ AM/AOC 2014. The cross ticked all the boxes for high judging points apart from inconsistent colouration between flowers. *Sarcochilus* Bessie (*S. George Colthup* x *S. Velvet*) is another example of a classic shaped flower, but with a more balanced labellum due to the influence of *S. hirticalcar* e.g. *S. Bessie* ‘Nice 2012’ HCC/ANOS 2016.

Yellow *Sarcochilus* Hybrid Breeding

Key plants in the background of yellow breeding are *S. hartmannii* ‘Red Snow’ (used by Neville Roper), *S. hartmannii* ‘Yellow Snow’, *S. hirticalcar* and *S. dilatatus* (Butler 2016).

By using the smaller species initially, David Butler was able to produce seedlings with a larger, more balanced labellum and clear yellow flowers with red centres. Plants can flower multiple times during the year. *Sarcochilus* Galaxy (*S. Misty* x *S. hartmannii*, registered in 2008 and with 19 hybrid progeny), was a key successful breeding parent. It is a fourth generation hybrid. It exhibits a bicolour arrangement - bright yellow background on well rounded tepals and a rounded flower outline, with striking central red blotches and lines, including on the yellow labellum, which is well balanced in size (Butler 2018).

Neville Roper started with *S. hartmannii* as the basis for his breeding, producing more classic style hybrids which were less vividly yellow, with a smaller labellum, no strong red colour, and mainly spring flowering. Plants derived from his breeding lines that have received Australian quality awards include *S. Roberta* (reg. 2012), *S. Cliona* (reg. 2009), *S. Amber* (reg. 2009), *S. Sunny* (reg. 2009)

and *S. Parma* (reg. 2012). *Sarcochilus* Parma (*S. Topaz* x *S. Roberta*) has some beautiful pastel-colours and spots in lemon and peach shades. *Sarcochilus* Parma ‘Lemon Drop’ HCC/AOC has a somewhat triangular outline and relatively thin petals, but the colour arrangement is delightful, with rich lemon tips and deeper lemon striping in the centre. David Butler has now combined the two breeding lines in further hybrids, which are showing promise of the better features of both lines (Butler 2018). Scott Barrie is also producing yellow and gold coloured hybrids, and states it has been the most popular colour for sales in the last decade (Barrie 2017).

The Rise of Multi-Coloured *Sarcochilus* Hybrids

Colour is determined by multiple genes, and breeders have different theories about how to bring colour into their hybrid lines, and where the colour comes from in the background. This has been determined by trial and error. Epigenetic factors that turn gene expression on or off compound the interpretation of results of colour breeding. The terms ‘albino’ and ‘albinistic’ are used very loosely in breeding. For plants it means the absence of chlorophyll, which is not what breeders mean. They are looking at plants lacking in specific colour, usually red-purple, and in the case of *Sarcochilus*, plants with just white and yellow colour pigments.

In the last four years, breeders have supplied the markets with volumes of highly coloured flowers, the range including yellow, red, purple, and orange combinations, and the emergence of peloric forms e.g. *S. Cherie*’s Joy ‘Wonder Wings’ AD/AOC 2010. Colours may present as solid, spotted, irregular and/or with a different coloured edge. The most prolific producer of coloured hybrids is Scott Barrie, with an unprecedented volume of registrations, and he has written articles briefly describing his breeding lines, including colour lines of orange, yellow, white, pink, and colour combinations (Barrie 2017). He is also producing pastel combinations. Due to the volume of hybrids, his expertise in predicting results and identifying key breeding plants for

colour is improving rapidly.

Flowering of seedlings from flask is relatively rapid, allowing fast turnover for further hybrid breeding. This has also led to many quality awards, many plants identifiable by the name 'Kulnura', e.g. 'Kulnura Dragonfly' ASR/AOC 2012, with eight seedlings receiving quality awards. The background of this cross is *S. Sweetheart* x *S. Elegance*, a cross with predominantly *S. fitzgeraldii* and *S. hartmannii* (including *S. Fitzhart*) in the background, and a small contribution of *S. ceciliae*. Striking colour combinations, particularly in pinks and reds, are being achieved. Scott Barrie has also been awarded ASR/AOC 2014 with crosses *S. Kulnura Iridessa*, *S. Kulnura Rusty*, *S. Kulnura Sanctuary*, *S. Sweetheart* and *S. Val*.

An example of the complexity of breeding is *S. Allure* (*S. DUNO* Nicky's Twin x *S. Elegance*), which has received seven quality awards in the last five years. The awarded progeny have segments that are not all well rounded, or completely circular in outline. There is wide colour variation from light and dark pink to almost solid red on the front surface and combinations of red and white. The cross is from David Butler's breeding, and was registered in 2012. Both of the parents have been extensively used in hybrids (35 and 20 times respectively). *Sarcochilus fitzgeraldii* predominates in the background, with contributions by *S. hartmannii*, *S. ceciliae* and *S. hirticalcar*, which contribute to the range of colours produced.

Foliage

In nature, foliage is usually various shades of green, and plants are attractive even when not flowering. During the hybridisation process, a number of seedlings with red and dark purple pigments in the foliage are appearing, and these are very popular with growers, creating a striking plant even when not in flower. Some of the darkest foliage can occur with pale or white flowers. David Butler considers this is coming from the smaller epiphytic species, and Scott Barrie agrees, suggesting it is likely to be arising from *Sarcochilus olivaceus* in the background (Barrie 2017). An awarded

example is *S. Kulnura* Honeydew 'Black' AM/AD/AOC 2016.

Fertility

There are significant fertility barriers that have emerged in some lines, with advanced crosses that do not producing seed capsules, or produce capsules with no seeds. This is slowing down some of the breeding. For example, the cross of *S. Misty* by David Butler produced only five plants due to little seed and poor germination, and only one plant was able to hybridise further. That plant would only take a pod, with no successful crosses achieved with the pollen for uncertain reasons, and was used to produce *S. Galaxy*, which again will only act as a pod parent. Fortunately, when he started combining his lines with Neville Roper's lines, the pollen from Neville's lines were fertile. A similar problem has occurred in many other genera, and one approach has been to reintroduce a species or early hybrid to try to overcome this barrier, such as reintroducing *S. hartmannii* as the pollen parent, which will tend to not dilute the colour of the other parent, or the use of *S. Fitzhart* which may intensify colour.

The Future

In the stampede for colour and size, are we in danger of losing something? Hybridising in many genera has had waves of popularity. The search for more colour, better texture, and improved size, can come at a cost. In *Phalaenopsis*, *Cymbidium*, and *Cattleya*, for example, where lower flower counts and large flower and plant size developed with generations, a move back towards smaller plants and flowers, and reintroduction of species, has occurred.

Judging systems have historically tended to advantage larger flowers with round shape, and have struggled to accommodate so-called 'novelty' or 'non-classic' hybrids with a strong species influence, in any genera. Availability of a balance of a range of styles, colours, and non-classic flowers, as well as extended flowering times, provide growers with a wide variety of options for their collections. We are now reaching the stage of achieving classic well-shaped hybrids with many colour variations,

and the standard for awarding hybrids must be raised, as is inevitable in all genera over time. Growers are influenced by which hybrids are receiving awards. This can determine the type of hybrids that they seek to purchase, which may in turn affect the hybrids the commercial breeders produce to ensure sales.

From the ANOS point of view, we are concerned about preservation of species in the wild, and their continued survival is helped by the increased production and availability of both species and hybrids for the education and enjoyment of growers and the public.

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Summary

Breeding with *Dendrobium falcorostrum* began in the 1960s with *D. Andrew Persson* and *D. Bardo Rose*, and increased to a peak of 19 hybrids in the 1990s, followed by an abrupt decline to a low number. Compact plant form, flower and labellum shape, fragrance and raceme habit, and in particular an ability to transmit the colour of the other parent are positive features of breeding with *D. falcorostrum*. With only 55 registered hybrids using the species as a parent, there is considerable scope for a resurgence of breeding.

The Species

Dendrobium falcorostrum was described in the *Sydney Morning Herald* on 18th November 1876 from a collection “upon the Brush-trees and Fern-trees in a mountain scrub on Mount Banda-Banda” at the head of the Macleay River, NSW (Fitzgerald 1882). Commonly known as the beech orchid, it is almost exclusively confined to *Nothofagus moorei* (F.Muell.) Krasser (Antarctic beech) forests at altitudes above 750 m, from the Barrington Tops in New South Wales to Lamington National Park in south-eastern Queensland.

It flowers from August to October and is usually epiphytic, high up in the shaded branches of the host, or rarely on tree ferns or other species, and is occasionally found on exposed rocks. It is a member of *Dendrobium* section *Dendrocoryne*, and in DNA sequence studies is most closely related to *D. gracilicaule*, and *D. kingianum*, *D. tetragonum* and *D. speciosum* (Burke et al 2008). The stems are fleshy, with a narrow base, up to 50 cm long but usually much shorter, with 2–5 leaves. The racemes are terminal, short, and gently arching with 4–20 flowers, usually clustered, very fragrant, with orange and purple markings. There is a conspicuous upturned pointed apex to the labellum (falcon’s beak), a unique feature. The flowers do not last long in warm weather.

The cool upland habitat gives a guide to

successful cultivation of the species and its hybrids under cool conditions. The mossy beech forest has frequent cloud, high humidity, breezes, filtered light and severe winter frosts, even snow. The species does best in climates with a cold winter, as in southern Australia, and may not flower well in lowlands further north, where conditions are much warmer in winter. It often grows with *D. pugioniforme* and *D. mortii*, which also need similar conditions for good cultivation. There has been some line breeding, and probably more generations of selected breeding is required to realize the full potential of the species.

The Hybrids

There are 683 hybrids to date with *D. falcorostrum* in their background. Some hybrids with *D. falcorostrum* have been seen frequently over the years, but others have been produced in low numbers and have rarely been available to growers. Assessments of the hybrids is often limited by too few examples to evaluate the variation in progeny or floral and plant quality. The great majority of these hybrids have only small amounts of *D. falcorostrum* in their breeding background, due to the use of several well-known early hybrids containing the species, with no further introduction of *D. falcorostrum* as a parent. Examples of early hybrids are *D. Bardo Rose*, *D. Peter* and *D. Aussie Bonanza* (Table 1). Hybrids with a low background percentage of *D. falcorostrum* do not usually exhibit any noticeable *D. falcorostrum* influence.

There are 55 hybrids with *D. falcorostrum* as one parent. The first four registrations were primary hybrids with other *Dendrocoryne* species (*D. speciosum*, *D. kingianum*, *D. fleckeri* and *D. tetragonum*) (Table 1). The hybrids clearly show the positive influences of *D. falcorostrum* on flower shape, fragrance, colour and floriferousness. The labellum shape, raceme habit and plant form come through in many progeny. Some of the well known primary hybrids have been used fairly extensively in making mainly *Dendrocoryne*

Table 1. Some hybrids using *D. falcorostrum* as a parent.

Hybrid	Other Parent	Registrant	Year
<i>D. Andrew Persson</i>	<i>D. speciosum</i>	G.H. Slade	1960
<i>D. Bardo Rose</i>	<i>D. kingianum</i>	Bert Overall	1961
<i>D. Peter</i>	<i>D. fleckeri</i>	R. Bedford	1972
<i>D. Star of Gold</i>	<i>D. tetragonum</i>	N. Jupp	1973
<i>D. King Falcon</i>	<i>D. Kingrose</i>	D. Cannon	1978
<i>D. Delicate Falcon</i>	<i>D. × delicatum</i>	D. Cannon	1979
<i>D. Gracious Falcon</i>	<i>D. × gracillimum</i>	D. Cannon	1982
<i>D. Aussie Bonanza</i>	<i>D. Aussie Ira</i>	P. Spence	1983
<i>D. Warambool</i>	<i>D. Ellen</i>	W. Upton	1983
<i>D. Nooro</i>	<i>D. Eureka</i>	C. Brandon	1983
<i>D. Miara</i>	<i>D. Hilda Poxon</i>	N. Roper	1985
<i>D. Colonial Maid</i>	<i>D. bigibbum</i>	P. Spence	1991
<i>D. Brinawa Sunset</i>	<i>D. Peewee</i> (syn. <i>D. Suzanne</i>)	J. Jarvis	1992
<i>D. Yondi Neon</i>	<i>D. Kathryn Banks</i>	S. Batchelor	1996
<i>D. Syd's Delight</i>	<i>D. Warringah</i>	Castle Creek	2010
<i>D. Wayne Turville</i>	<i>D. Flinders</i>	W. Turville	2017

Table 2. RHS registrations per decade with *D. falcorostrum* used as a parent

Years	No. Registrations	Breeders*
1960–1969	2	G.H. Slade (1) B. Overall (1)
1970–1979	7	Cannon (2) Jupp (2) Bedford (2)
1980–1989	15	Cannon (2) Spence (6) Upton (2) Brandon (2) Sheen (1)
1990–1999	19	Spence (1) Upton (5) Batchelor (4) Sheen (1)
2000–2009	6	Spence (4)
2010–2017	5	

*listing breeders with two or more registrations between 1970–2017



D. falcorostrum 'Anembo'.
Photo Wayne Turville



D. Miara x Aussie Joy
Photo Peter Adams



D. falcorostrum on *Nothofagus moorei* in
Border Ranges, New South Wales.
Photo Peter Adams



D. Syd's Delight. Photo Peter Adams

hybrids, but also occasional inter-sectional hybrids (Table 1) eg. *D. Aussie Stripes* (section *Latouria*), *D. Colonial Maid*, *D. Brinawa Sunset* and *D. Elegant Falcon* (section *Phalaenanthé*).

History of Breeding with *D. falcorostrum*

Some of Australia’s past well known hybridists contributed from 1-11 hybrids each in the 55 recorded, in several phases (Table 2). Breeding with *D. falcorostrum* began in the early 1960s, with *D. Andrew Persson* (x *D. speciosum*, registered by G.H. Slade), and *D. Bardo Rose* (x *D. kingianum*, registered by Bert Overall). There was an increase in hybrid registrations in the 1970s and 1980s, rising to a peak of 19 in the 1990s, after which there was a decline to six in 2000–2009 (Table 2). There were five registrations between 2010–2017, and only two after 2010.

The sharp decline may be related to the initial breeders becoming less active or stopping breeding, and newer breeders taking up other directions. After the year 2000 there were still considerable opportunities to continue *D. falcorostrum* breeding as outlined under Future Directions. One of the very positive clear results of using *D. falcorostrum* as a parent is that it allows a range of colours from other species to be expressed in the progeny. Yellow and orange-brown colours are evident in *D. Star of Gold*, *D. Aussie Bonanza* and *D. Miara*. White to deep mauve colours are seen in *D. Bardo Rose* and *D. Colonial Maid*, and yellow

to green colours in *D. Peter*. Spotting can result from using hybrids with *D. tetragonum* in the background e.g. *D. Wayne Turville*. The shape of *D. kingianum* is retained in many crosses e.g. *D. Bardo Rose*, *D. King Falcon*, and *D. Yondi Neon*. *Dendrobium speciosum* shape dominates in *D. Andrew Persson*, but substance is often reduced, limiting flower longevity.

There are 11 hybrids with more than 50% *D. falcorostrum* registered between 1973 and 2017 (Table 3). They have all used *D. falcorostrum* as a parent, crossed with hybrids that also have *D. falcorostrum* in their background. *Dendrobium Valmai* (*D. Kim* x *D. falcorostrum*) usually has white flowers with a little colour at the base and/or in the labellum. *Dendrobium Star Falcon* (*D. Star of Gold*. x *D. falcorostrum*) has orange and yellow tones inherited from *D. Star of Gold*.

Of the three most recent registrations, *D. Wayne Turville* (*D. Flinders* x *D. falcorostrum*) is one where a range of initial results is available. *Dendrobium Flinders* is *D. Cobber* (*D. Aussie Treat* x *D. Candice*) crossed with *D. Lawrose* (*D. Our Lawrence* x *D. Bardo Rose*). Thus the main background species contribution is theoretically 62.5% *D. falcorostrum*, 20% *D. kingianum*, 5.5% *D. tetragonum* and 6% *D. fleckeri*. These percentages give only a limited guide to the relative contributions of species to the phenotype (appearance) of the hybrids, and the influence of each species

Table 3. Hybrids with *D. falcorostrum* as one parent, and >50% *D. falcorostrum* in the background breeding.

Hybrid	Other parent	Registrant	% <i>D. falcorostrum</i>
<i>D. Andrew's Falcon</i>	<i>D. Andrew Persson</i>	Mills 2016	75
<i>D. Aussie Bounty</i>	<i>D. Bardo Rose</i>	Spence 1983	75
<i>D. Aussie Joy</i>	<i>D. Peter</i>	Spence 1985	75
<i>D. Aussie Majestic</i>	<i>D. Aussie Freckles</i>	Spence 1983	75
<i>D. Star Falcon</i>	<i>D. Star of Gold</i>	Jupp 1973	75
<i>D. King Falcon</i>	<i>D. Kingrose</i>	Cannon 1978	62.5
<i>D. Sandra Elaine</i>	<i>D. Tania's Pride</i>	His & Hers 1998	62.5
<i>D. TriMura Heavenly Leela</i>	<i>D. Elegant Sunset</i>	Muralitharan 2015	62.5
<i>D. Valmai</i>	<i>D. Kim</i>	Peck 1988	62.5
<i>D. Wayne Turville</i>	<i>D. Flinders</i>	Turville 2017	62.5
<i>D. French Lace</i>	<i>D. Coljohn</i>	Upton 1990	53.1



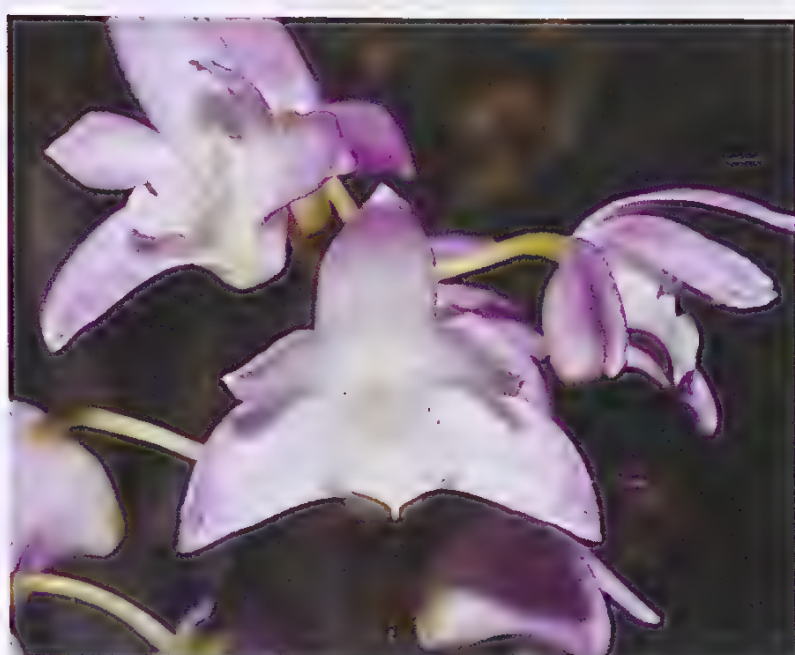
D. Andrew Persson. Photo Peter Adams



D. Peter. Photo Peter Adams



D. Bardo Rose 'Jayhurst'. Photo Peter Adams



D. Bardo Rose 'Super'. Photo Peter Adams



D. Bardo Rose 'Super'. Photo Jon Cara



D. Colonial Maid 'Verity'. Photo Jon Cara



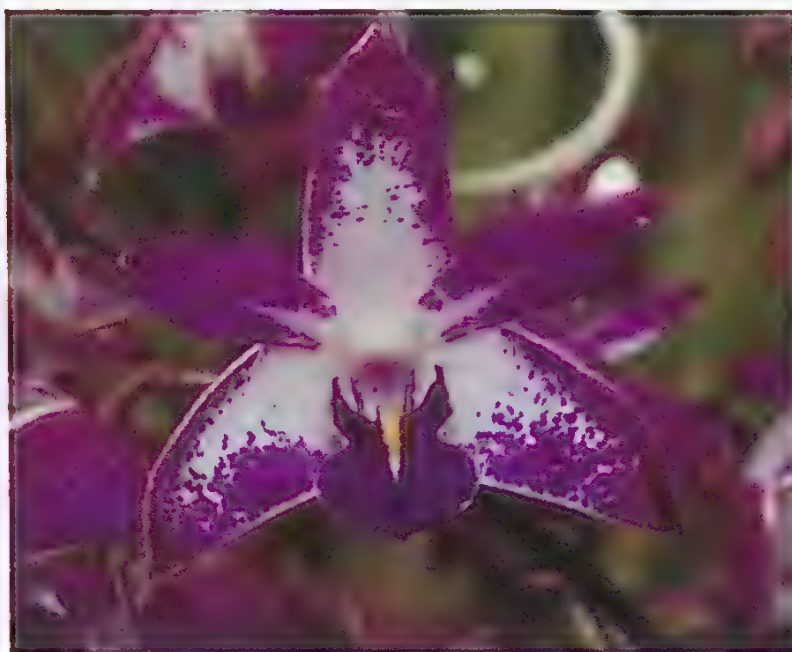
D. Wayne Turville. Photo Wayne Turville



D. Wayne Turville. Photo Wayne Turville



D. Syd's Delight. Photo Peter Adams



D. Flinders 'Grant Garrett'. Photo Peter Adams



D. Falcon Star 'Mem. Tess Turville'.
Photo Wayne Turville



D. Valmai. Photo Wayne Turville

may vary considerably. The progeny of *D. Wayne Turville* are short to medium height plants, with *D. kingianum* style flowers which are pale to mid mauve, occasionally with prominent, fairly large spots or larger areas of colour. The flowers have good substance and are reported to last well, up to two weeks in spring conditions in southern Victoria.

Syd Batchelor made a crossing of *D. Warringah* x *D. falcorostrum*, registered as *D. Syd's Delight* by Castle Creek in 2010. The colour of the *D. Warringah* parent used is unknown but all of the 12 seedlings flowered by Castle Creek were white with a mauve blush labellum (Andrew Francis, pers. comm.). Breeding with *D. falcorostrum* is continuing, with DUNO listing three crossings of *D. falcorostrum* made by Tony Blewitt - namely *D. Stunning*, *D. Peter Fetherston* and *D. Lorikeet*. The progeny of each of these has a low percentage of *D. bigibbum*.

Future Directions

There are many sect. *Dendrocoryne* hybrids that could be bred back to *D. falcorostrum*. *Dendrobium Wayne Turville* illustrates the potential of this style of breeding, using a colourful recent hybrid, *D. Flinders*, to produce variously coloured *Dendrobium kingianum* style hybrids. The few intersectional hybrids with *D. bigibbum* produced so far has shown good potential. Remakes of successful hybrids with superior forms crossed with *D. falcorostrum* are also likely to produce improvement in quality.

Acknowledgements

Keith Riseley assisted with analysis of hybrid lists. Wayne Turville provided information about *D. Star Falcon*, *D. Valmai* and *D. Wayne Turville*.

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The Australian Orchid Registered Hybrid List (2018) is now available to download free from anos.org.au



Dendrobium Peter. Photo Peter Adams

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Species Breeding - A Unique Result

Many years ago Neil Finch, then the owner of DUNO, bred a *S. hartmannii* of unusually strong growth, with flowers to match. On seeing the seedling in flower and being assured it was indeed genuine, Robert Lewry’s response was “B_S_”, or words to that effect. In most regards it resembled the species so, despite being such an unusually robust example, was readily accepted as genuine. Down the track it was awarded and named *S. hartmannii* ‘Bee Ess’ HCC/AOC, a slight variation on the name but in keeping with the “BS” connotation.

The parents Neil used were *S. hartmannii* ‘Snow White’ (a Blue Knob-style seedling from Ken Russell) and *S. hartmannii* ‘Red Snow’ (a superior Numinbah form). He grew on sixty or more of the seedlings, all of which progressed normally except for one which really tested his patience, being slow to grow and the last to flower. All was forgiven, however, when its stunning first flowers were revealed! *Sarcochilus hartmannii* ‘Bee Ess’ continues to be a slow plant to grow to a substantial size, and it can at times prove difficult to flower well. In some seasons it is shy to flower, while in others it can be a bit bunched. As a parent it has been successful in passing on its robust character, with the progeny being highly sought after for both breeding and display.

Species Breeding - Exceptional Babies

The selfing of *S. hartmannii* ‘Bee Ess’, firstly by Neil Finch, and later by the then DUNO owner Brian Gerhard, proved to be a stroke of inspired breeding. As the first seedlings began to flower it could even be said that a new pinnacle in *S. hartmannii* line-breeding had been reached. The selfings varied, as is the usual nature of siblings, but on average were superior to *S. hartmannii* ‘Bee Ess’ itself, being equally robust, but with improved flowers that were better displayed and less bunchy on the raceme. I was fortunate to obtain two flasks of the selfings, from which the better

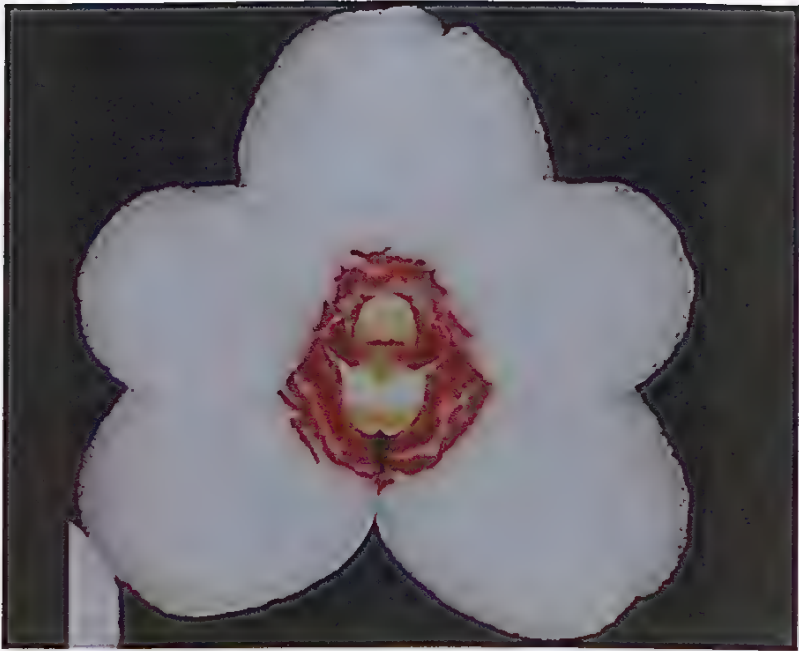
seedlings were then selected for use in future breeding programs. These I called ‘Baby BS’ as it was important to differentiate the selfings from *S. hartmannii* ‘Bee Ess’ itself. Of those selected seedlings the best examples included *S. hartmannii* ‘Baby BS #2’ AM/ANOS 2015 and *S. hartmannii* ‘Baby BS Wow’, both of which have proved to be worthy parents.

In further line breeding, the selfings have been crossed with *S. hartmannii* ‘Red Snow’, *S. hartmannii* ‘Gold Spot’ and the like, an example being *S. hartmannii* ‘Beaut’ which is ‘Gold Spot’ x ‘Baby BS Wow’. As well, the selfings have been crossed amongst themselves, for example *S. hartmannii* ‘Baby BS #3’ x ‘Baby BS #2’. I have called seedlings of this cross *S. hartmannii* ‘BBS #3 x #2’ to denote their continuing affinity with *S. hartmannii* ‘Bee Ess’, but it’s all getting rather too complicated.

Breeding which involves *S. hartmannii* ‘Bee Ess’ and its progeny requires extra patience, the seedlings taking longer to mature than I would have expected, but breeding continues, and patience is rewarded with outstanding results.

Hybrid Breeding

This was the obvious next step. Good examples of line-bred *S. hartmannii* are hard to beat, but as hybridisers we like to imagine the next step, their use in hybrid breeding, with its endless possibilities. Of the several hybrids flowered to date using *S. hartmannii* ‘Bee Ess’ and its selfings, many have been white with a red centre, and the flowers are large and shapely with great texture and a special ‘presence’. Further, these hybrids are almost always crystalline, and glimmer in the light when fresh. To a lesser extent other colours are showing up, the most notable being the clear yellows and splashes of *S. Galaxy*. Selected seedlings from these hybrids have now been used in further breeding with many of their progeny now in spike to flower this year.



S. hartmannii 'Bee Ess' flower.
Photo Callyn Farrell



S. hartmannii 'Bee Ess' plant.
Photo Callyn Farrell



S. hartmannii 'Baby BS #2' ('Bee Ess' x self).
Photo David Butler



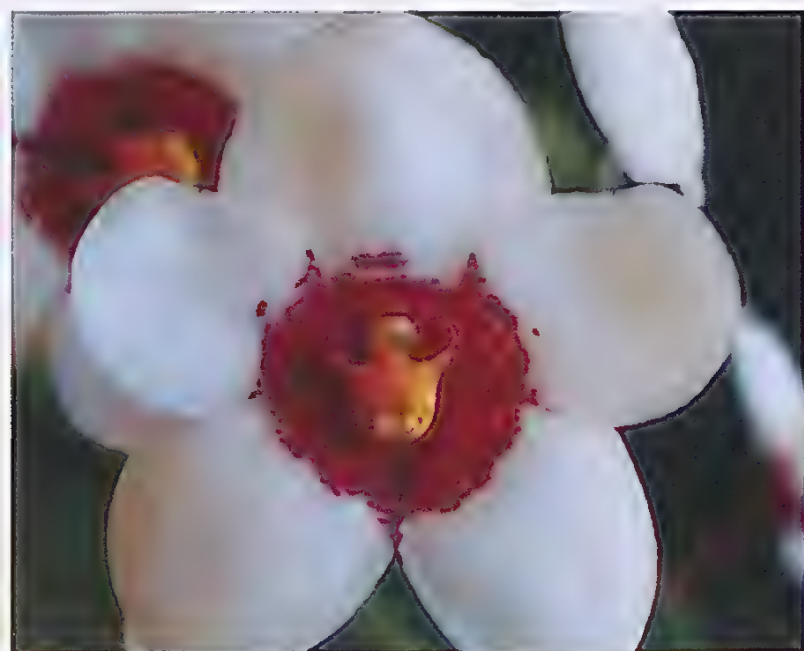
S. hartmannii 'Baby BS Wow' ('Bee Ess' x self).
Photo David Butler



S. hartmannii 'Beaut' ('Gold Spot' x 'Baby BS Wow').
Photo David Butler



S. hartmannii 'Seedling 2016' ('Baby BS Ice Fall'
x 'Baby BS #3'). Photo David Butler



S. Contented (*S. hartmannii* 'Baby BS Wow' x *S. Harmony*). Photo Glenice Simmons



S. Galaxy (*S. Misty* x *S. hartmannii* 'Baby BS #2'). Photo David Butler



S. Nicky's Twin Bees (*S. Duno Nicky's Twin* x *S. hartmannii* 'Baby BS Wow'). Photo Glenice Simmons



S. Purity 'Seedling 106'. Photo David Butler



S. Purity (*S. George Colthup* x *S. hartmannii* 'Baby BS Wow'). Photo David Butler



S. Superb (*S. Amelia* x *S. hartmannii* 'Baby BS #2'). Photo David Butler

As each generation matures and flowers the best seedlings become parents in both species line-breeding and hybridising programs, giving growers the excitement and anticipation which accompanies each flowering cycle. No doubt *S. hartmannii* 'Bee Ess' and its progeny will continue to play a role in the future development of modern *Sarcochilus*. And it all started with the arrival of a special *S. hartmannii* seedling named 'Bee Ess'.

Acknowledgements

Neil Finch, the founder of DUNO and proud breeder of *S. hartmannii* 'Bee Ess' has most helpfully detailed its early history and parentage. Callyn Farrell, now the owner of DUNO, has kindly provided invaluable assistance in the researching and writing of this article.

David Butler is a well known breeder and grower of *Sarcochilus* for many years.



S. hartmannii 'Baby BS Ice Fall' ('Bee Ess' x self).
Photo David Butler



S. hartmannii 'Baby BS #2'. Photo David Butler



S. hartmannii 'Baby BS #3'. Photo David Butler



S. Amelia 'White Spots'. Photo David Butler

Dendrobium Ellen: History As A Quality Attribute

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The first artificial hybrid using Australian species as parents was raised by Trevor Lawrence, of Dorking, England, who crossed *D. speciosum* with *D. kingianum* to make *D. Specio-Kingianum*, the hybrid being registered in 1892 (Upton 1984). There are still plants in cultivation today labeled *D. Specio-Kingianum*, but whether these date to this first cross is not known.

The second artificial hybrid using Australian species as parents was raised by Wilhelm Schmidt of Turramurra, who crossed a *D. tetragonum* var. *tetragonum* pollen parent with a *D. kingianum* pod parent, which was also the first artificial orchid hybrid made in Australia. The pod parent may have been *D. kingianum* 'Schmidts', a plant still in cultivation today (Adams & Lawson 1995). Seeds from Schmidts cross were sown in April 1914, so presumably the cross had been made the previous spring, Sept–Oct 1913. The seedlings first flowered 4.5 years later (Upton 1989) and the hybrid, named *D. Ellen* for Schmidt's daughter, was registered in 1928 (Upton 1989).

Schmidt was an early member of the Orchid Society of New South Wales, and through this society he may have first met Herbert James Rumley (Bert) Overall. Overall was born at Macquarie Plains, on Tasmania's west coast in 1889. After a stint in Queensland driving cane trains, and some time back in Tasmania, during which he completed a Bachelor Degree in Chemistry and a Diploma in Metallurgy, Bert moved to Sydney for work, taking up residence at Bardo Road, Newport (Upton 1984). He joined the Orchid Society of New South Wales shortly after it was founded in 1934. Overall and Schmidt evidently had a number of interactions as a result of their shared interest in orchids, some of which have been preserved in literature. In the second volume of *Australian Orchid Review* there is a Figure of *D. Ellen* grown by Schmidt, photographed by Overall. Tragically, at the outbreak of the Second World War, Schmidt,

a German national, was interned in Camp 1 at Tatura, Victoria, and died while interned (Upton 1984).

It is possible that Overall took custodianship of some, or all, of Schmidt's orchid collection for the duration of his internment, including a red *D. kingianum* which Overall subsequently used in his first cross of *D. Bardo Rose* (Upton 1984). Whether this was the same *D. kingianum* used by Schmidt in his *D. Ellen* cross, I don't know. I can only speculate that the attributes of the plant as a parent were discussed by the two men at some point during their friendship, and this may have been a factor in Overall's decision to use it as a parent. Overall probably also took custodianship of one or more of Schmidt's *D. Ellen* plants.

After the Second World War, Australia actively encouraged immigration from Western Europe, and among these immigrants was Walter Upton, who arrived in 1950. Upton had fought in WWII with the RAF, serving with No. 5 Group of Bomber Command, completing 45 missions, being shot down in flames on his 46th, and spending the last months of the War a prisoner of war in Stalag Luft 1 (AOF website). Upton had already married an Aussie by the time he became a POW, so it was inevitable that he would end up in Australia, I guess. He and his wife Jill set up at North Narrabeen, and Upton joined the Manly and Northern Beaches



Dendrobium Ellen 'Schmidts'. Photo Matt Renner



Dendrobium Ellen, unknown breeding.
Photo Peter Adams

Orchid Society in the 1950s. This is possibly where he first met Bert Overall.

Whatever the circumstances, these two gentlemen struck up a friendship that lasted till Overall's death in 1984 at the age of 92. It is evident that the two swapped plants, for example, Upton (1984) published a photograph taken in 1979 of a *D. Bardo Rose* plant in what looks like a 400 mm tub. This plant was given to him by Overall, as 'quite a small piece' (Upton 1984 p. 258), suggesting that it had been in Upton's possession more than a decade by 1979, and that Upton was quite proud of how well he had done with it. It is likely that a piece of Schmidt's *D. Ellen* was among the plants that Overall gave to Upton, but exactly when this exchange took place is unknown. Upton included a photograph of the Schmidt's *D. Ellen* in his care in his book *Dendrobium Orchids of Australia* (Upton 1989, Fig. 107).

In 1982 a five year old Andrew J. Perkins, already an orchid fanatic, was given a piece of *D. Ellen* by Upton, who communicated that it was Schmidt's *D. Ellen* (A.J. Perkins pers. comm.). This sort of gift is entirely characteristic of the generosity exhibited by orchid growers towards younger and newer growers. Perkins grew this piece for thirty years before moving to Western Australia to

start a new contract at the Perth Herbarium after working at the Royal Botanic Garden, Sydney. Andrew and I both worked for the Royal Botanic Gardens, Sydney during the early 2010s, Andrew as a Weeds Botanist and I as an ABRIS funded post-doctoral fellow. We shared our enthusiasm for orchids so, being unable to take orchids with him, as part of Andrew's pre-departure distribution of plants a piece of Schmidt's *D. Ellen* came to me.

The best timeline I can estimate for this plant's passage from grower to grower is set out below, and I would be interested to hear from readers who have more information on the history of Schmidt's *D. Ellen*.

Germinated	November 1914.
Schmidt to Overall	1939–1940
Overall to Upton	late 1950s or 1960s.
Upton to Perkins	1982.
Perkins to Renner	August 2012.

Adams & Lawson (1995) state that the surviving plants from Schmidt's original cross are not of high quality. This is true enough, but when there is so much history surrounding the people who have grown this plant, it is hard to not admire it. And while it is a fair assessment that the plants are not the best when compared with a set of judging standards, they do have the quality of being 'the first' Australian native orchid hybrid made in Australia, and on this basis the plants now have both historical and cultural significance.

While appreciating the striking recent advances in quality of Australian *Dendrobium* hybrids, you can rightly point to Schmidt's *D. Ellen* as the genesis of so many of the orchids we today enjoy. We can appreciate that significance the more thanks to growers like Overall and Upton, who distributed historical plants among the growing community to ensure their longevity, and documented in literature such as *The Orchadian* and *Australian Orchid Review* their experiences and interactions such that, even if the history of individual clones has not been traced, it can be reconstructed from the recollections these and other growers have written down and recorded for prosperity. The best way to repay

this debt of gratitude, I think, is to follow their example. Besides which, being aware of the history of a plant adds to my enjoyment of it.

I am particularly proud of my Schmidt's *D. Ellen*, not the least because it celebrated its 100th birthday with me. I'm proud of it because it provides a link back to people I admire who enjoyed orchids maybe even more than I do, each in vastly different times from my own. When Schmidt made his cross, electricity was a new, uncommon commodity used primarily for lighting, and aseptic technique for germinating orchid seeds had not been conceived. People were still heating hot water in a 'copper'. When Schmidt gave the plant to Overall the world was heading toward a war Schmidt was to be caught up in. When Overall gave Schmidt's plant to Upton, it was after the same war in which Upton had fought against Schmidt's mother country, and in which Schmidt died in internment in the country Upton was to make his home. When Upton gave Perkins the plant, the cold war was still on, and the United States was arguably at the peak of its geo-political power, and when Perkins gave it to me, we were well into this digital age of Facebook, Twitter, and

social media. But despite all this change, it's the same plant, and we've all enjoyed it. So with that context, if I were pressed for a take home message to this article, I would say it is this: by keeping good records we enhance the value of our plants for those who will grow them after us because, well cared for, they will outlive us all.

Acknowledgements

I thank Joyce Stone for encouraging me to write this article.

Dr. Matt A.M. Renner is a systematic botanist at the Royal Botanic Gardens, Sydney.

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Kempsey Speciosum Spectacular 2018

Text and photos by Roslyn Capell
capell666@ozemail.com.au

This year's Speciosum Spectacular was held from 31st August to 2nd September, and had the benefit of fine, mild weather, which helped the flowers open well for the Saturday morning judging. Callyn Farrell's presentation on 'The Influence of *Dendrobium speciosum* on *Dendrobium* Hybrids' on Friday night was well received.

The event attracts enthusiasts and native orchid lovers from around the country, not just New South Wales. It presents a valuable and enjoyable opportunity to see a range of plants, benched by growers who have mastered the art of producing well-flowered mature plants of Australasian species and hybrids, not just *Dendrobium speciosum*. It is also an opportunity to meet hybridisers who are making the crosses that populate the first flowering seedling classes, and which are the plants we will be growing and showing for many years. The Kempsey weekend is a time to socialise with old orchid friends and make new ones.

We have this event because of the hard work and generosity of Ted and Winsome Walmsley and their family, and members of the ANOS Mid North Coast Group. A great deal of time, effort and expense goes into staging the Spectacular. The Group's president Dennis Sinclair, secretary John Zietsch and treasurer Richard Murray – who all act as show marshalls – work hard to ensure the event is a success, but so do many others, and everyone involved in setting up the venue and doing all the jobs that have to be done to make it happen and run smoothly deserves acknowledgement. This includes the growers who bring their plants for us to enjoy, sometimes travelling very long distances.

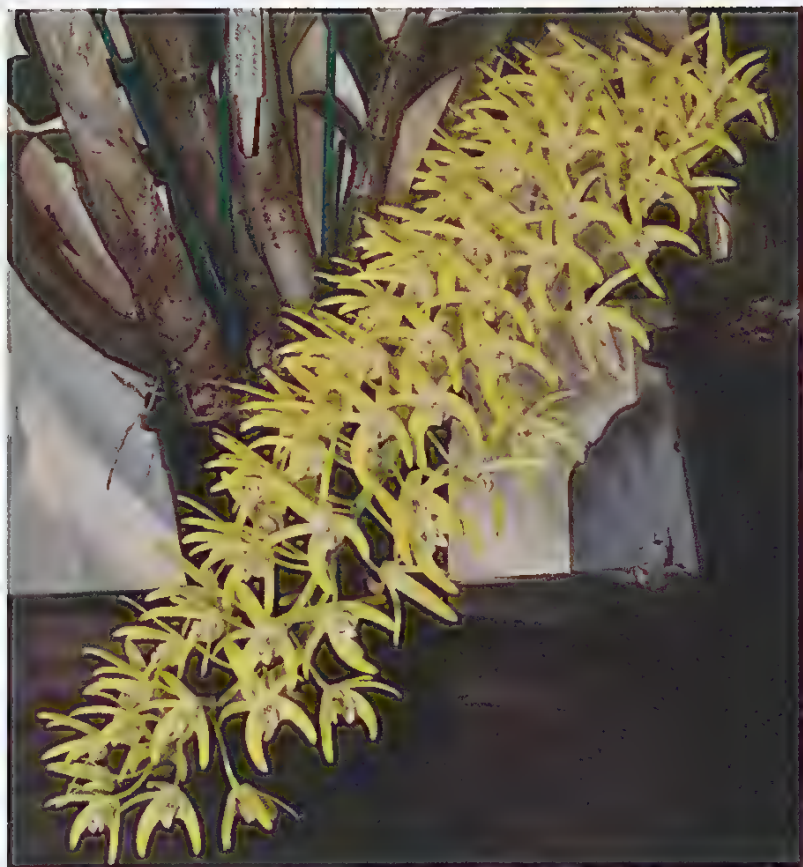
Although the hybrids are now a feature, the show has always primarily been about *Dendrobium speciosum*. Champion *D. speciosum* went to Bernie Fletcher's plant of *D. speciosum* var. *speciosum* 'Windermere' x *D. speciosum* var. *curvicaule* 'Misty

Mountain'. Reserve Champion was Ted & Winsome Walmsley's *D. speciosum* var. *speciosum* 'National White' x *D. speciosum* var. *curvicaule* 'Ted'. There were nine awards given at the show, seven quality awards and two cultural awards, to be confirmed.

The Col Brandon Trophy is awarded to the hybrid best illustrating the desirable features of *Dendrobium speciosum* when used in hybridising, without regard to features which have been inherited from other species. Isolating those features proved to be a challenging exercise. What are the desirable characteristics recognised as inheritable from *D. speciosum*? They include improvement in floriferousness, strength of inflorescence, substance and texture of the flowers, and arrangement of flowers on the inflorescence.

Entries in three classes were eligible, where *D. speciosum* was one parent. There were some fine, mature plants which were floriferous, with strong inflorescences and well-arranged flowers of good substance and texture. *Dendrobium* Gracemere 'Joy' x *D. speciosum*, *D. Special Surprise* 'Rose' (*D. Anne's Rainbow Surprise* x *D. speciosum*), *D. Gundy Moon* (*D. Burgundy Cream* x *D. speciosum* – in this case the pollen came from *D. speciosum* var. *curvicaule* 'Daylight Moon'), and *D. Brimbank Cerise* (*D. Breathless* x *D. speciosum*) were examples where the desirable features of *D. speciosum* were apparent.

The winner of the trophy was *D. Jayden* 'Sheen', which was also Champion Hybrid of the show. This plant had previously received AM/AOC 2017, and was upgraded to FCC/AOC at Kempsey this year. It was also awarded by the ANOS judging panel. It was a large mature plant grown by Henk van den Berg, with many strong, upright inflorescences of well-presented and well-balanced flowers, having a shape which is clearly influenced by *D. speciosum*, and a good floral display in proportion to its size. It is a superior orchid hybrid in every respect. This plant shared



D. speciosum 'Windermere' x 'Misty Mountain'.
Champion *D. speciosum* Kempsey.



D. Special Surprise 'Rose'.



D. speciosum 'National White' x 'Ted'. Reserve Champion
D. speciosum Kempsey.



D. Australian Robbie McInnes 'Sydenham'.



D. Claro Sunset 'Apricot Gold'.



D. Gundy Moon.



D. Jayden 'Sheen'.



D. Brimbank Gold. Best Hybrid Seedling Kempsey.



D. Greta Sunrise 'Don and Dave'.



D. Gracemere 'Joy' x *D. speciosum*.

the bench with another of Henk's plants, the imposing and strikingly coloured *D. Jayden* 'Greta' which received an Award of Distinction for colour from both ANOS and AOC panels at the Newcastle conference in 2010.

There were a number of hybrids with *D. speciosum* as one parent where the characteristics for which that species is known did not dominate. One plant of note was Henk van den Berg's *D. Greta Sunrise* 'Don & Dave' (*D. Hunter Titanium* x *D. speciosum*), a cross originated by Don Cruickshanks. It was a very compact plant with rounded and well filled-in chunky flowers and a lot of visual impact despite its small stature. In the background breeding is 65.6% *D. speciosum*, 15.6% *D. fleckeri*, 6.3% *D. tetragonum*, 4.7% *D. kingianum*, 3.1% *D. falcorostrum*, 3.1% *D. jonesii*, and 1.6% *D. gracilicaule*.

An eye-catching hybrid, with a very pleasing combination of well-defined colours from the various species in its background, was the aptly-named *D. Claro Sunset* 'Apricot Gold' (*D. Hunter Evelyn* x *D. speciosum*), a cross made and registered by Mark Daniels. It has 56.3% *D. speciosum*, 18% *D. tetragonum*, 9.4% *D. falcorostrum*, 6.3% *D. bigibbum*, 5.5% *D. kingianum*, 3.1% *D. fleckeri* and 1.6% *D. jonesii*. A particularly well-flowered plant of *D. Australian Robbie McInnes* 'Sydenham' HCC/AOC 2011 (Vic.) (*D. Aussie Parade* x *D. speciosum*) was also benched. In this plant I see a combination of the traits of all species in the mix, which includes *D. tetragonum*, *D. falcorostrum* and *D. kingianum*, rather than the influence of *D. speciosum*.

Dendrobium speciosum is known for its high flower count, both on individual inflorescences and on the plant in general. I have taken an interest in the effect subsequent infusions of *D. speciosum* have on the floriferousness and shape of hybrids, for example with *D. Kayla* to produce *D. Dunokayla*, with *D. Avril's Gold* to produce *D. Cosmic Gold*, and with *D. Jayden* to produce *D. Greta Snow*. In *D. Dunokayla* the overall shape of the flowers does not seem to have been changed much by the additional *D. speciosum*, probably since it is basically a chunky "*D. speciosum*" shape to begin with.

The flowers I have seen are often larger than *D. Kayla* and there are more of them, but perhaps not as many more as might have been expected. I have been looking forward to seeing more plants of *D. Dunokayla* as they mature further to see whether maturity significantly increases flower count.

There was a plant of *D. Dunokayla* at Kempsey this year with approximately 12 inflorescences, yet the increase in floriferousness does not seem to have been as significant as it could have been after doubling the percentage of *D. speciosum* to nearly 70%. I suspect this is due to the countervailing influence of the 18.8% *D. fleckeri* in that grex, which is a significant percentage. *Dendrobium fleckeri* has a very desirable orange colour but is notorious for its low flower count, usually bearing only 2–3 flowers. *Dendrobium Cosmic Gold* 'Sandy' increased its average flower count from 23 to 50 from 2009 when it received its AM to 2014 when it received its FCC, but there is only 3.1% *D. fleckeri* in *D. Cosmic Gold*.

The first flowering hybrid seedling class had many quality entries, and a range of shapes and colours. First place went to a very fine plant of *D. Brimbank Gold* (*D. Dunokayla* x *D. Cosmic Gold*) owned by Wayne Perrin, and a grex originated by Michael Drobski and registered by him in 2015. Though *D. speciosum* is not a direct parent, it is well-represented in its ancestry. *Dendrobium Brimbank Gold* is 78.1% *D. speciosum*, 10.9% *D. fleckeri*, 4.7% *D. falcorostrum*, 3.1% *D. jonesii* and 3.1% *D. tetragonum*. The plant was floriferous for a first flowering seedling, and others of its grex were similarly endowed. It will be interesting to see the outcome of the battle between the genes for floriferousness of *D. speciosum* and *D. fleckeri* as the Brimbank Gold seedlings mature. So far the indicators are that *D. speciosum* will fare well.

Roslyn Capell is an ANOS and AOC judge, an ANOS Councillor, and the ANOS Conservation Officer.

#299 *Plectorrhiza tridentata* 'Lynwood' ACC/ANOS 2017 (NSW) (reprinted)

Points	84.8
Owner	Lorraine & Bill Dobson
Date & event	20 October 2017 -
Photos by	Bill Dobson
#flowers/inflorescences	198 / 49
Measurements(mm):	
flower	7.7 across 7.7 vertical
petal	3.7L 1.9W
sepal	4.8L 2W
dorsal	4.8L 3W
labellum	6.4L 4.8W
inflorescence length	35
Detailed avege points:	
shape(25)	
colour(20)	
size(15)	
substance/texture(10)	
floriferousness(15)	
habit/attractive(15)	



#304/305 *Sarcochilus* Olive Nymph 'Wild Strawberries' HCC-AD/ANOS 2017 (VIC)

Points	78.2
Owner	Adams, Peter & Sheryl
Date & event	20 December 2017 Special judging
Photos by	Peter Adams
#flowers/inflorescences	28 / 5
Measurements(mm):	
flower	25 across 22 vertical
petal	12L 6W
sepal	11L 5W
dorsal	14L 8.5W
labellum	11L 5W
inflorescence length	150
Detailed avege points:	
shape(25)	19
colour(20)	16.4
size(15)	12.1
substance/texture(10)	7.6
floriferousness(15)	11.6
habit/attractive(15)	11.5



#306 *Dendrobium bigibbum* 'Liam' HCC/ANOS 2018 (NSW)

Points	81.8
Owner	DUNO & Elmore Orchids
Date & event	12 April 2018 -
Photos by	Ian Chalmers
#flowers/inflorescences	24 & 2 buds / 3
Measurements(mm):	
flower	60.9 across 55.4 vertical
petal	26.5L 32.5W
sepal	29.5L 12.6W
dorsal	21.8L 12.7W
labellum	25.5L 11.8W
inflorescence length	410
Detailed avege points:	
shape(25)	19.2
colour(20)	17.6
size(15)	12.4
substance/texture(10)	7.9
floriferousness(15)	12.9
habit/attractive(15)	11.8



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Saturday 6th October 2018, Montrose Town Centre, 935 Mount Dandenong Tourist Rd, Montrose VIC 3765. 10 am – 4 pm (plant sales from 9.30 am).

ANOS Illawarra Sarcophilus Show

Weekend of 13th - 14th October 2018 Old Courthouse, Cliff Road, Wollongong 2500. Saturday 9 am to 4 pm, Sunday 9 am to 3 pm.

ANOS Central Coast Late Spring Show

Weekend of 13th - 14th October 2018, Narara Valley Nursery, 2 Manns Road, Narara 2250. Saturday & Sunday 9 am - 4 pm.

ANOS Sydney Group Sarcophilus Show

Saturday 20th October 2018 Kellyville Village (shopping centre), 90 Wrights Road, Kellyville. 9 am to 4 pm.

ANOS Newcastle Sarcophilus Show

Weekend of 20th - 21st October 2018, Windale - Gateshead Bowling Club, 2A Lake Street, Windale 2306. Saturday & Sunday 10 am - 4 pm.

ANOS Macarthur Late Spring Show

Saturday 27th October 2018, Intersection Oran Park Drive & Peter Brock Drive, Oran Park. 9 am to 4 pm.

ANOS Geelong Annual Show

Saturday 3rd November 2018, at Wesley Uniting Church, 100 Yarra Street, Geelong 9 am to 4 pm.

The 9th ANOS Conference and Show

Wednesday 21st to Sunday 26th August 2019 at the Strathpine Community Centre QLD. The event, 'Get Going, Get Growing', will be hosted by the KABI Goup.

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Directory of ANOS Groups (and Associated Societies)

NEW SOUTH WALES

- **ANOS Central Coast:** PO Box 3010, Erina NSW 2250 - Neville Lee (02)4340 5157 2nd Wednesday each month, 8pm. Narara Community Centre, 2 Pandala Rd, Narara 2250
- **ANOS Far North Coast Inc.:** 2 Treelands Cres, Ballina, NSW 2478 - Keith Skaines (02)6686 6303 3rd Saturday of month (except Dec. & Jan.), 2pm various venues, contact the secretary.
- **ANOS Illawarra:** 2 Wilford St, Corrimal NSW 2518 - Bruce Porter (02)4284 8308 2nd Tuesday each month, 7pm. Old Court House, Wollongong.
- **ANOS Macarthur and District:** 8A Boundary Rd., Parramatta NSW 2150 - Wally Southwell (02) 4681 8589 3rd Thursday each month, 8pm. Birriwa Community Hall, Fitzpatrick Rd, Mt Annan.
- **ANOS Mid-North Coast:** 69 The Lakes Way, Forster NSW 2428 - John Zietsch (02)6554 9733 3rd Sunday each month, 12 noon, followed by BBQ. Contact for location - Taree or Wauchope
- **ANOS Newcastle Inc.:** PO Box 4021, Rathmines NSW 2283 - Peter Denning (02)4975 3729 4th Thursday of month, 7.30pm. Elernmore Vale Community Centre, Croudace St, Elernmore Vale.
- **ANOS Sydney Inc.:** 9 Alicia St, Glenwood NSW 2768 - Andrew Locke (02)8824 6338 3rd Friday each month, 8pm. Senior Citizens Hall, B.H. Community Centre, Conie Ave, Baulkham Hills.
- **ANOS Warringah Inc.:** PO Box 421, Forestville NSW 2087 - Bill Dobson (02)9981 2525 3rd Tuesday each month, 8pm. Community Hall, Starkey St, Forestville.

QUEENSLAND

- **ANOS Beenleigh Inc.:** PO Box 1130, Beenleigh QLD 4207 - David Cleal (07)3805 6865 1st Thursday each month, 7.30pm. Showground Hall, James St, Beenleigh
- **ANOS Kabi Inc.:** PO Box 424, Aspley QLD 4034 - David James (07) 3359 5752 2nd Tuesday of month except Jan., 7.30pm. Isabella Griffin Room, Strathpine Community Centre, 199 Gympie Road, Strathpine.
- **ANOS Mackay and District:** 24 Barton St, Mackay, QLD - Arthur Pinkney (07)4952 2186 2nd Thursday each month, Andergrove Community Centre, Celeber Drive, Andergrove.
- **ANOS Townsville Inc.:** 92 Curie St, Wulguru QLD 4811 - John Nuss (07)4778 4311 1st Tuesday monthly (excl. Jan.) 8pm Townsville O.S. Hall, Joe Kirwan Pk, cnr Bamford Lane & Charles St, Townsville
- **Native Orchid Society of Toowoomba Inc.** 106 Umbiram Rd, Wyreema QLD 4352 - Josie Wright (07)4696 2150 1st Friday of month, 7.30pm Lutheran Church Hall, cnr West and Alderley St, Toowoomba

SOUTH AUSTRALIA

- **Native Orchid Society of South Australia Inc.:** PO Box 565 Unley SA 5061 - Les Nesbitt (08) 8261 1550 4th Tuesday each month, 8pm. St Matthew's Hall, 67 Bridge St, Kensington.

VICTORIA

- **ANOS Geelong Inc.:** 609 South Street, Ballarat VIC 3350 - Anita Hinton (03) 9743 6040 2nd Wednesday each month, 7.30pm. Uniting Church Hall, Yarra St, Geelong.
- **ANOS Melbourne Suburbs Inc.:** PO Box 169, Bayswater VIC 3153 - Richard Johnson 04 7808 7752 4th Wednesday of month (excl. December), 7.30pm. Montrose Primary School, Leith Rd, Montrose 3765
- **ANOS Victoria Inc.:** PO Box 308, Boronia VIC 3155 - (03)9387 2771 1st Friday each month, 8pm. Toorak Uniting Church Hall, , 603 Toorak Rd, Toorak.

WESTERN AUSTRALIA

- **ANOS Western Australia Inc.:** Mrs Lyn Morgan, 99 Bywater Way, Wilson WA 6107 - (08)9451 2164 2nd Monday each month, 8pm. Wilson Community Hall, Braibrise Rd, Wilson.

NEW ZEALAND

- **ANOS New Zealand Native Orchid Group** 42 Titiro Moanna Rd, Korokoro, Lower Hutt 5012



Dendrobium Jayden 'Sheen' AM/ANOS 2018.
Champion Hybrid at Kempsey 2018.
Photo Peter Adams